TM 11-5820-689-15

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

OPERATOR, ORGANIZATIONAL, DS, GS, AND DEPOT MAINTENANCE MANUAL

RADIO SETS AN/SRC-32, AN/SRC-32X AND AN/SRC-32Y, AND CONTROL, REMOTE SWITCHING C-7270/SRC-32

HEADQUARTERS, DEPARTMENT OF THE ARMY

FEBRUARY 1968

WARNING

DANGEROUS VOLTAGES EXIST IN THIS EQUIPMENT

Be careful when working on the remote control circuit or on the 115 volt ac or 110 volt dc power supply line connections. DON'T TAKE CHANCES, EXTREMELY DANGEROUS VOLTAGES EXIST IN THE FOLLOWING UNITS: Receiver-Transmitter, Radio RT–826/SRC–32; Dynamotor-Power Supplies PP–4598/SRC–32 and PP–4599/SRC–32X, and Power Supply PP–4600/SRC–32Y; and Antenna AS–2048/SRC–32.

RADIATION HAZARD

Tube types OA2WA and OB2WA are used in this equipment. These tubes contain a small amount of radioactive material and are potentially hazardous when broken. Contact qualified medical personnel immediately in case of an accidental cut. For further instructions, refer to TB SIG 225.

Techincal Manual
No. 11-5820-689-15

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, D. C., *19 February 1968*

Operator, Organizational, Direct Support, General Support, and Depot Maintenance Manual
RADIO SETS AN/SRC-32, AN/SRC-32X AND AN/SRC-32Y AND CONTROL, REMOTE SWITCHING C-7270/SRC-32

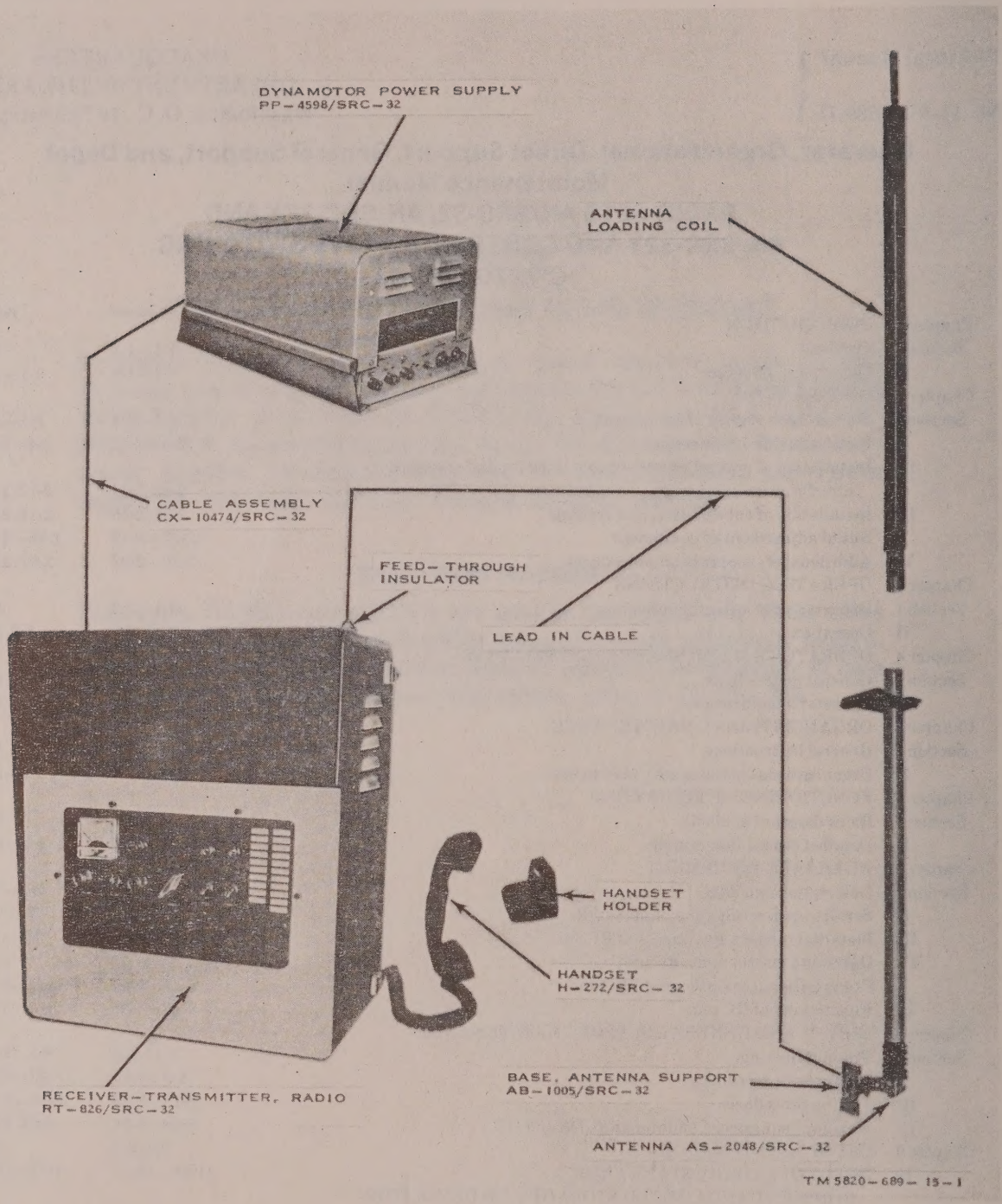


Figure 1-1. Radio Set AN/SRC-32.

CHAPTER 1

INTRODUCTION

Section I. GENERAL

1-1. Scope

a. This manual describes Radio Set AN/SRC-32 (*) (fig. 1-1) and covers its installation, operation, functioning, and maintemance.

b. Official nomenclature followed by (*) is used to indicate all models of the equipment item covered in this manual. Thus, Radio Set AN/SRC-32 (*) represents Radio Sets AN/SRC-32, AN/SRC-32X, and AN/SRC-32Y.

c. Commanding officers and operating personnel should be familiar with applicable Federal Communication Commission (FCC) regulations and International Safety at Sea Convention Procedures.

1-2. Indexes of Publications

a. Refer to the latest issue of DA Pam 310-4 to determine whether there are new editions, changes, or additional publications pertaining to the equipment.

b. Refer to the latest issue of DA Pam 310-7 to determine if there are current, applicable Modification Work Orders in force.

1-3. Forms and Records

a. Reports of Maintenance and Unsatisfactory Equipment. Maintenance forms, records, and reports which are to be used by maintenance personnel at all maintenance levels are listed in and prescribed by TM 38-750.

b. Report of Packaging and Handling Deficiencies. Fill out and forward DD Form 6 (Report of Packaging and Handling Deficiencies) as prescribed in AR 700-58/NAVSUP PUB 378/AFR 71-4/MCO P4030.29, and DSAR 4145.8.

c. Discrepancy in Shipment Report (DISREP) (SF 361). Fill out and forward Discrepancy in Shipment Report DISREP) (SF 361) as prescribed in AR 55-38/NAVSUPINST 4610.33/AFM 75-18/MCO P4610.9A, and DSAR 4500.15.

d. Report of Equipment Manual Improvements. Report of errors, omissions, and recommendations for improving this manual by the individual user is encouraged. Reports should be submitted on DA Form 2028 (Recommended Changes to DA Publications and Blank Forms) and forwarded direct to Commanding General, U.S. Army Electronics Command, ATTN: AMSEL-MA-CR, Fort Monmouth, N.J., 07703.

Section II. DESCRIPTION AND DATA

1-4. Purpose and Use

a. Radio Set AN/SRC-32 (*) provides amplitude modulated (am), radiotelephone, ship-to-shore and ship-to-ship communication between coastal, harbor, and river vessels and shore stations. It operates within the frequency range of 2,000 to 5,000 kilocycles (kc). Ten preset crystal-controlled channels selected for the operating frequencies are available. A single control selects any transmitting channel and associated receiving channel.

b. While intended for use within a 100-mile range, the available transmitter power of 145 watts and the receiver sensitivity of 5 micro-

volts for readable audio output permit extension of the range. The exact operating range depends upon antenna location, terrain, atmospheric conditions, density of message traffic, and direction of signal relative to the location.

c. Radio Sets AN/SRC–32, –32X, and –32Y are identical in purpose and operation and similar in appearance. The differences consist of power supplies and interconnecting cables to adapt Receiver-Transmitter, Radio RT–826/SRC–32 (RT unit) to one of three power sources as shown in the following chart:

Power source	Power supply	Interconnecting cable
24–28 vdc	PP–4598/SRC–32	CX–10474/SRC–32
110 vdc	PP–4599/SRC–32X	CX–10474/SRC–32
115 vac, 60 cy	PP–4600/SRC–32Y	CX–10473/SRC–32

1–5. Technical Characteristics

Type of equipment ..... Receiver-transmitter.
Type of operation ..... One-way reversible.
Number of tubes ..... 23.
Frequency range (max) ..... 2.0 to 5.0 megacycles.
Number of channels ..... 10.
Frequency tolerance ..... .005%.
Modulation of carrier ..... Amplitude.
Type of modulation ..... Voice.
Distance range ..... Variable (para 1–4*b*).
Audiofrequency range ..... 200 to 3,000 cycles.

a. Transmitter-Modulator.

Number of tubes ..... 16.
Rf power output (nominal). ..... 100 watts.
Harmonic output attenuation (min). ..... 70 db.
Modulation percentage (max). ..... 100.

b. Receiver.

Number of tubes ..... 7.
Sensitivity ..... 2 microvolts for 50-milliwatt audio output.
Audio power output (max). ..... 3 watts.
Intermediate frequency ..... 455 kilocycles.
Avc ..... Delayed; applied to all RF and IF stages.
Automatic noise limiting ..... Selectable.
Squelch (no-signal noise suppression). ..... Selectable and adjustable.

c. Antenna.

Number ..... 1.
Type ..... Inductively loaded whip.
Frequency ..... Broad tuned to 3.3 mc.

d. Power Supply.

Number ..... 1 of 3 available.
Power requirements:

Power source	Receiver	Standby	Transmitting
24–28 volts dc	3 amperes	5 amperes	50 amperes
110 volts dc	1.5 amperes	2.5 amperes	10 amperes
115 volts ac	130 watts	200 watts	900 watts

1–6. Components of Radio Set AN/SRC–32(*)

The components of Radio Sets AN/SRC–32, AN/SRC–32X, and AN/SRC–32Y are listed in the following chart:

Federal Stock Number	Item	Radio Set AN/SRC–32	Radio Set AN/SRC–32X	Radio Set AN/SRC–32Y	Dimensions Height (in)	Dimensions Depth (in)	Dimensions Width (in)	Unit weight (lb)
5820-937-3176	Receiver-Transmitter, Radio RT-826/SRC-32	1	1	1	22 3/8	11 3/4	18 3/4	62
6125-926-8023	Dynamotor-Power Supply PP-4598/SRC-32	1	--	--	9 1/4	19 1/2	12 1/8	70
6145-926-8024	Dynamotor-Power Supply PP-4599/SRC-32X	--	1	--	9 1/4	19 1/2	12 1/8	70
	Power Supply PP4600/SRC-32Y	--	--	1	7	14 3/4	9	46

Federal Stock Number	Item	Radio Set AN/SRC-32	Radio Set AN/SRC-32X	Radio Set AN/SRC-32Y	Dimensions Height (in)	Dimensions Depth (in)	Dimensions Width (in)	Unit weight (lb)
5965-937-3445	Handset H-272/SRC-32	1	1	1				1½
5985-937-3221	Antenna AS-2048/SRC-32 (286 ¾ in)	1	1	1	------	------	------	6½
5985-937-3222	Base, Antenna support AB-1005/SRC-32	1	1	1	------	------	------	4
6145-643-1021	Cable, Antenna Lead-in (180 in)	1	1	1	------	------	------	⅓
5995-937-3550	Cable, Assembly, Special Electrical CX-10474/SRC-32 (120 in)	1	1	--	------	------	------	1 2/3
5995-937-3549	Cable, Assembly, Special Electrical CX-10473/SRC-32 (120 in)	--	--	1	------	------	------	1 1/3
	Running Spares	1 Set						
	Additional equipment	1 Group (para 1-8)						

1-7. Description

a. RT Unit. The RT unit (fig. 1-2) is bulkhead-mounted and contains all the controls and components of the receiver and transmitter except the handset, which is mounted at a convenient location externally. Access to the chassis is gained by removing the case. The chassis is bottom-hinged to a backplate and swings down on two supporting chains to permit component changes and adjustments. The components are mounted on the front and back of the chassis, which also supports the front panel. The backplate has top, bottom, and side lips and four keyholes for mounting the RT unit to the bulkhead. The top lip mounts an antenna feedthrough insulator. The bottom lip contains four access holes for connecting the cables. The side lips mount the anchors for the case latches.

b. Power Supplies. Three types of power supplies are available, depending on the power source; 24 volts direct current (dc), 110 volts dc, or 115 volts alternating current (ac). One of the three is supplied as part of each radio set.

(1) *Dc power supplies* (fig. 1-3). The power supplies for operation from 24 volts dc (PP-4598/SRC-32) and 110 volts dc (PP-4599/SRC-32) are identical in size, chassis configuration, and functional organization. Incoming dc drives a converter and two motor generators. The converter produces 115 volts ac for filament and low voltage dc through conventional transformer circuits. The two motor-generators produce high voltage dc when the handset press-to-talk switch is depressed. The power supply may be deck- or bulkhead-mounted; in the latter case, the generator shafts must be oriented in the horizontal plane. The chassis, which has a snap-on bottom cover plate, supports larger components including the converter, motor generators, and transformers in addition to control relays and the terminal boards. Other components are under the chassis. Fuses and a bias control are mounted at one end. Each end of the chassis has a flanged foot with two holes for mounting bolts. The bottom plate has matching clearance holes. The chassis has a ventilated removable cover attached by two screws through extensions at each end. A cutout at each end of the cover provides cable access.

(2) *Ac power supply* (fig. 1-4). The 115-volt ac power supply (PP-4600/SRC-32) contains two transformers, one of which supplies ac for filaments and the low voltage rectifier. The other supplies ac for the transmitter high voltage rectifier-filter. The transformers are mounted on top of the chassis along with the high and low voltage rectifier boards and a control relay. Other components are under the chassis. Both ends of the chassis are flanged. It is secured to a bottom mounting plate by two screws through one of the end flanges. The

other end flange slips into a recess at one end of the bottom mounting plate. There are four mounting holes on the bottom mounting plate. The power supply may be deck- or bulkhead-mounted. A top cover slides down over the chassis and is secured by four screws, two in each end. A cutout is provided at one end of the top cover for connecting-cable access to the terminal boards. Fuses and a bias control are mounted in one end of the chassis.

c. Antenna (figs. 1–1 and 2–6). The vertical antenna is a mast and whip assembly approximately 25 feet long. A loading coil atop the 1 1/2-inch hollow-tube mast supports the whip section. The mast is supported by a bidirectional swivel-mounting base and a bulkhead clamp. The antenna lead-in cable attaches at the bottom of the mast. A clip holds the mast in a lowered or stowed position.

d. Power Cables (fig. 2–5). The CX–10474/SRC–32 cable connects Radio Sets AN/SRC–32 and AN/SRC–32X to the appropriate dc power supplies, and the CX–10473/SRC–32 cable is used to connect the ac power supply to Radio Set AN/SRC–32Y. Both cables are 10 feet long, jacketed, multiconductor with terminal lugs on both ends. The CX–10473/SRC–32 has 8 conductors, the CX–10474/SRC–32 has 10.

1–8. Additional Equipment Required

The following equipment is not supplied as part of Radio Set AN/SRC–32(*) but is needed for use with the radio set.

a. Crystal Kit. The kit contains 10 pairs of crystals covering an assigned range of frequencies. Each pair consists of one crystal for a transmitter channel frequency and one crystal for the corresponding receiver channel.

b. Cable, Two-Conductor, as Required to Connect Power Supply to Source. Recommended wire sizes are given in paragraph 2–9.

c. Power Source, as Required for Specific Model of Radio Set. Power source voltage and power requirements are given in paragraphs 1–4*c* and 1–5, respectively, for each of the three models.

1–9. Systems Applications
(figs. 1–5, 1–6, and 1–7)

While the radio set is not issued as part of a system, two or more can constitute one of several system configurations. The radio set operates on a press-to-talk basis for transmitting, during which time the receiver is inoperative. This prevents simultaneous two-way (duplex) operation. One-way reversible (simplex) communication can be maintained point-to-point with two radio sets, or any one point to all others in a system with more than two. Alternatively, a command post type of system can be configured with point-to-point communication with each of several forward posts independently; by operation of the channel selector switch on the command post set, a different frequency link to each forward post can be established. Typical system configurations are shown in figures 1–5, 1–6, and 1–7. The same frequency may be used for both transmit and receive, or two frequencies as indicated in figure 1–5. Station 2 may be an AN/SRC–32(*) or any station with matching frequency capability, such as Coast Guard, Marine Telephone, or FCC Shore Installations.

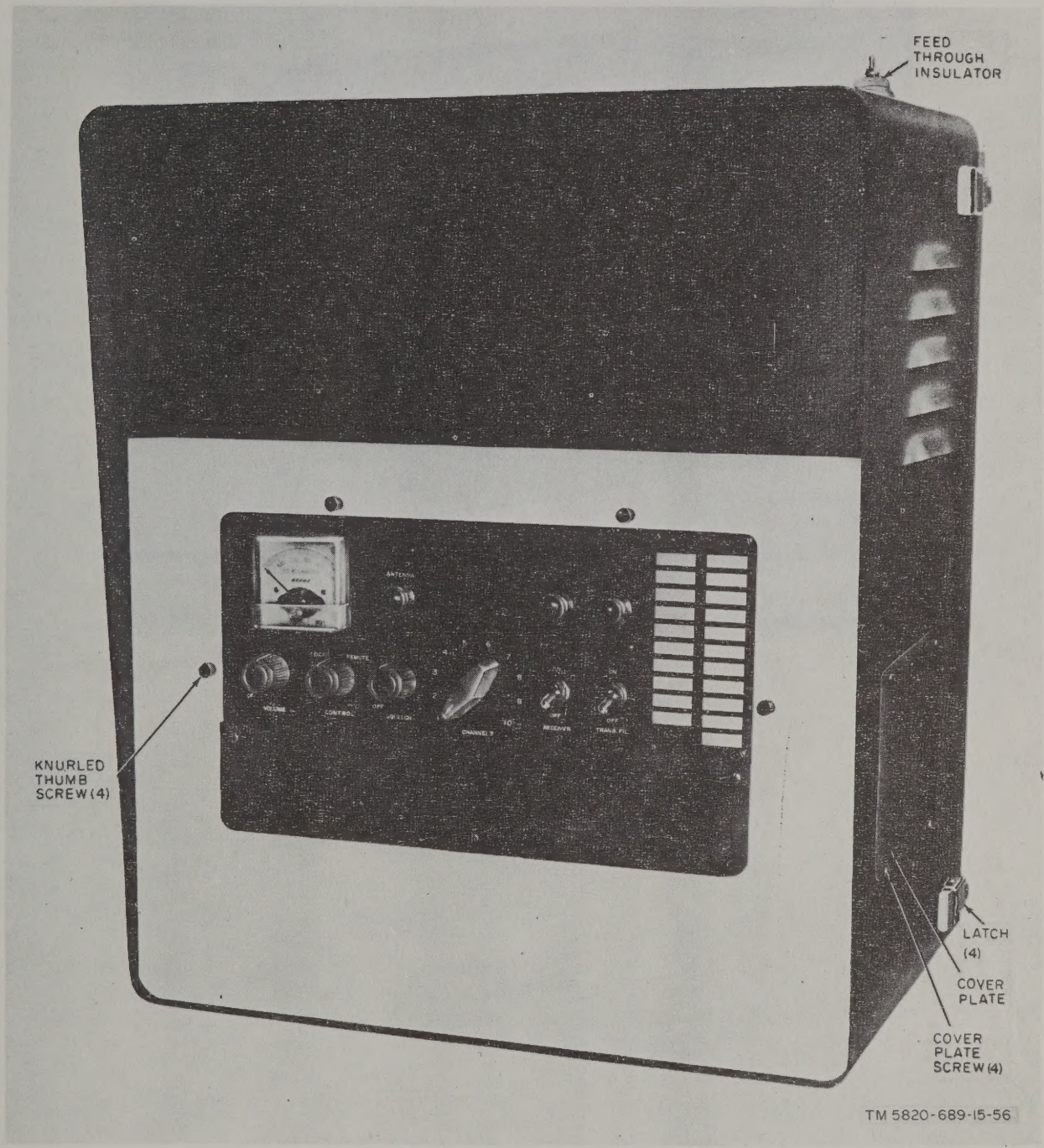


Figure 1-2. RT unit.

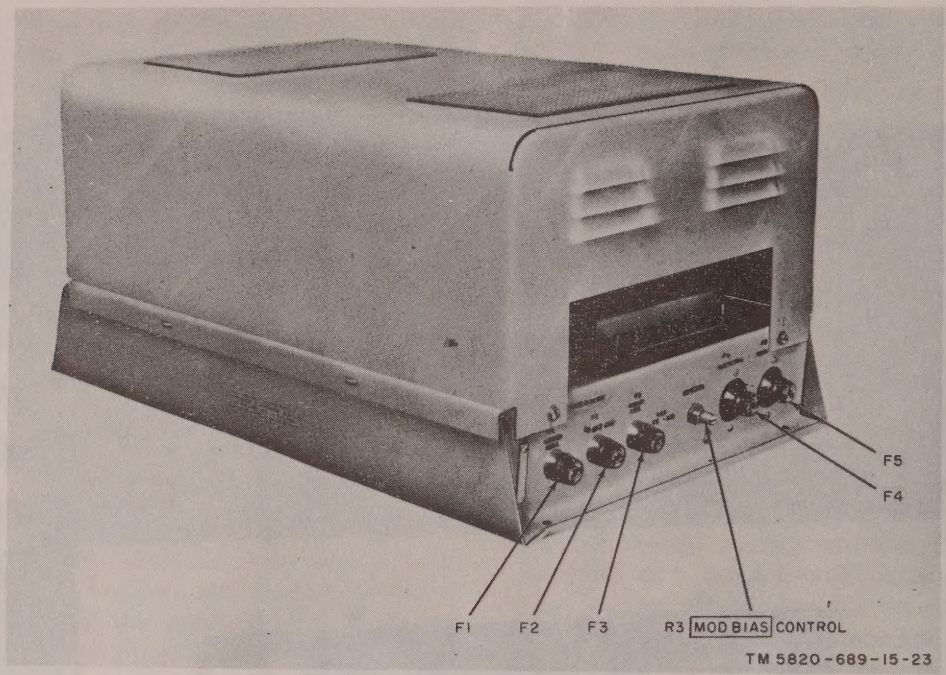


Figure 1-3. Typical dc power supply.

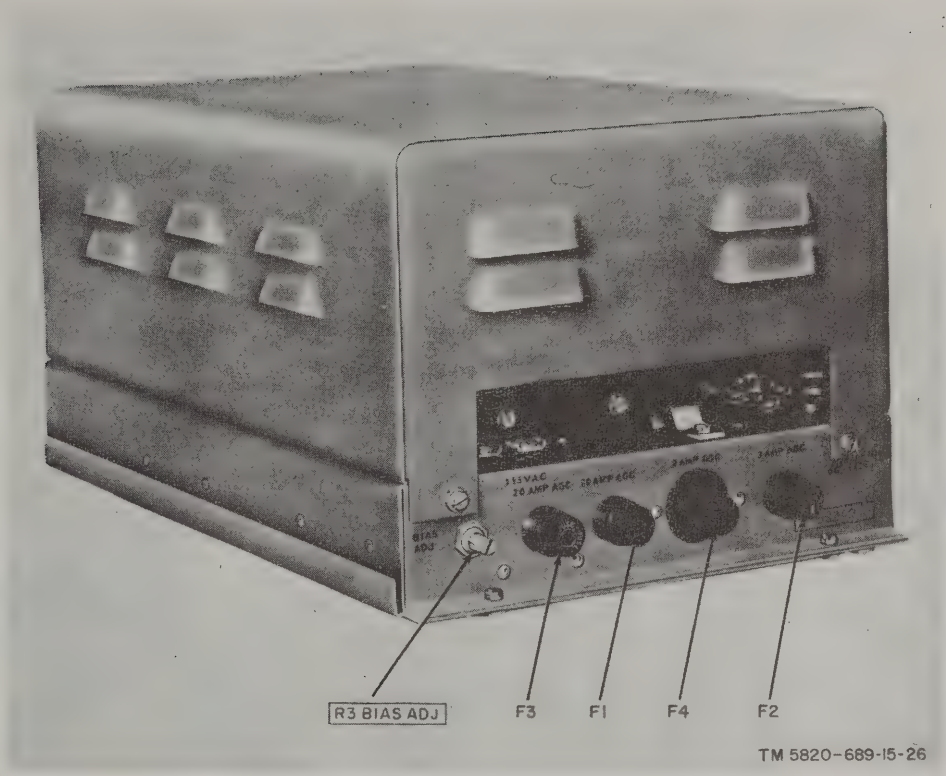


Figure 1-4. 115-vac power supply.

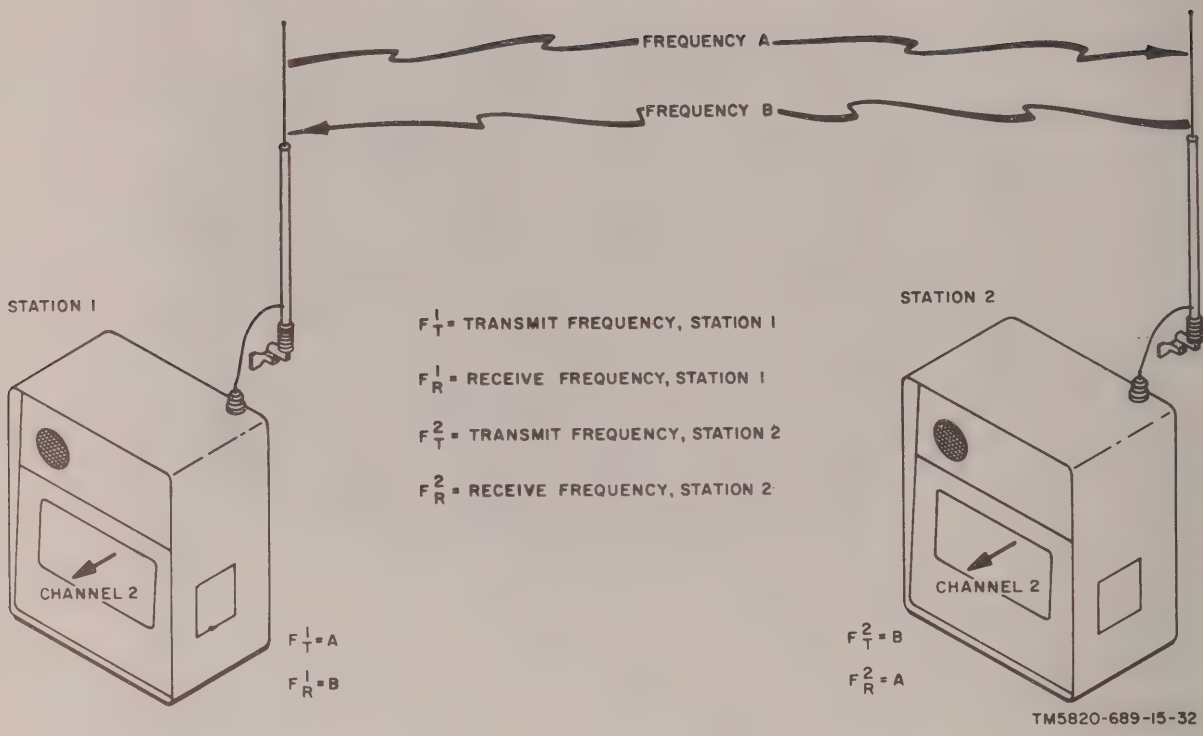


Figure 1-5. Typical point-to-point communication system.

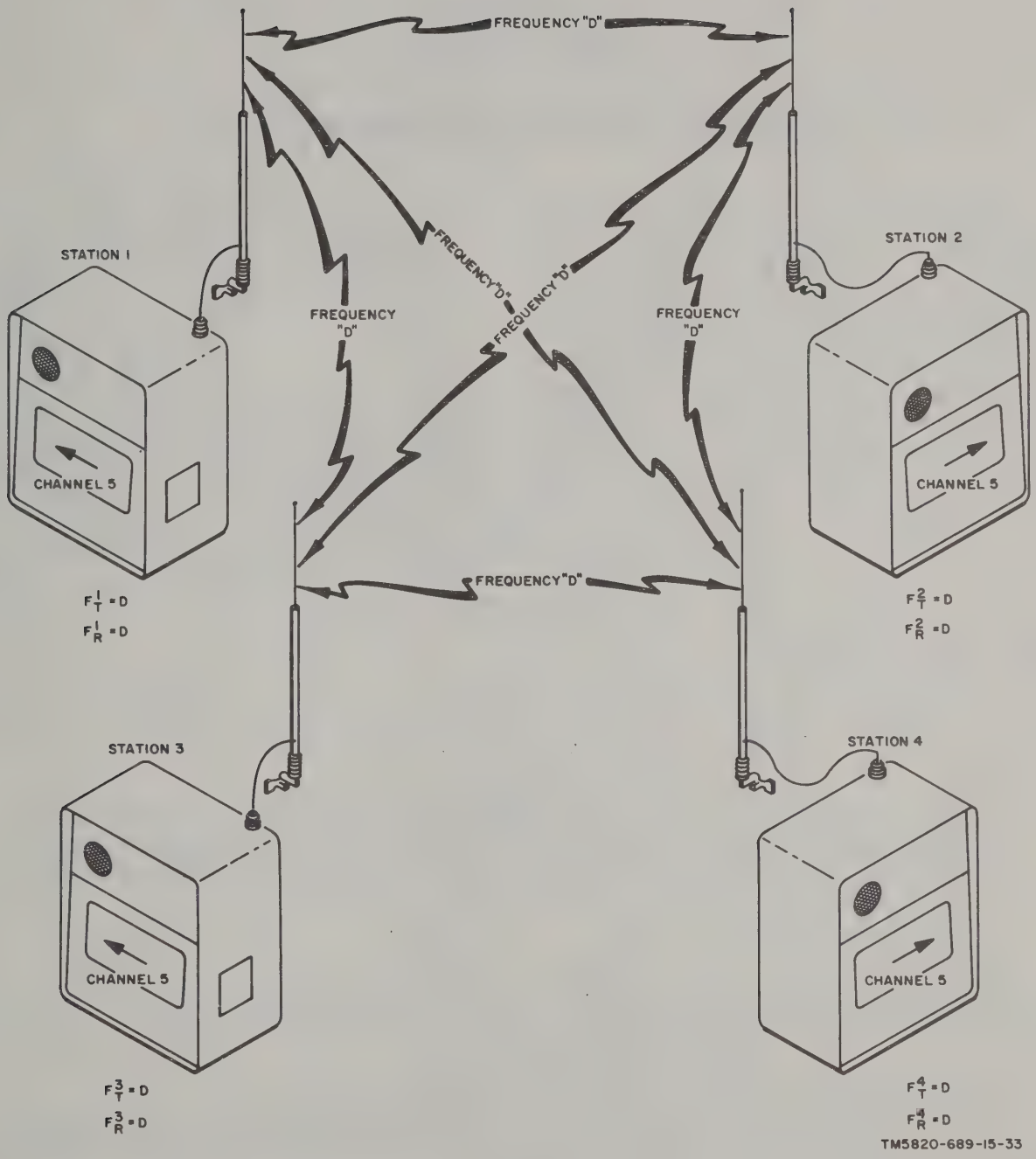
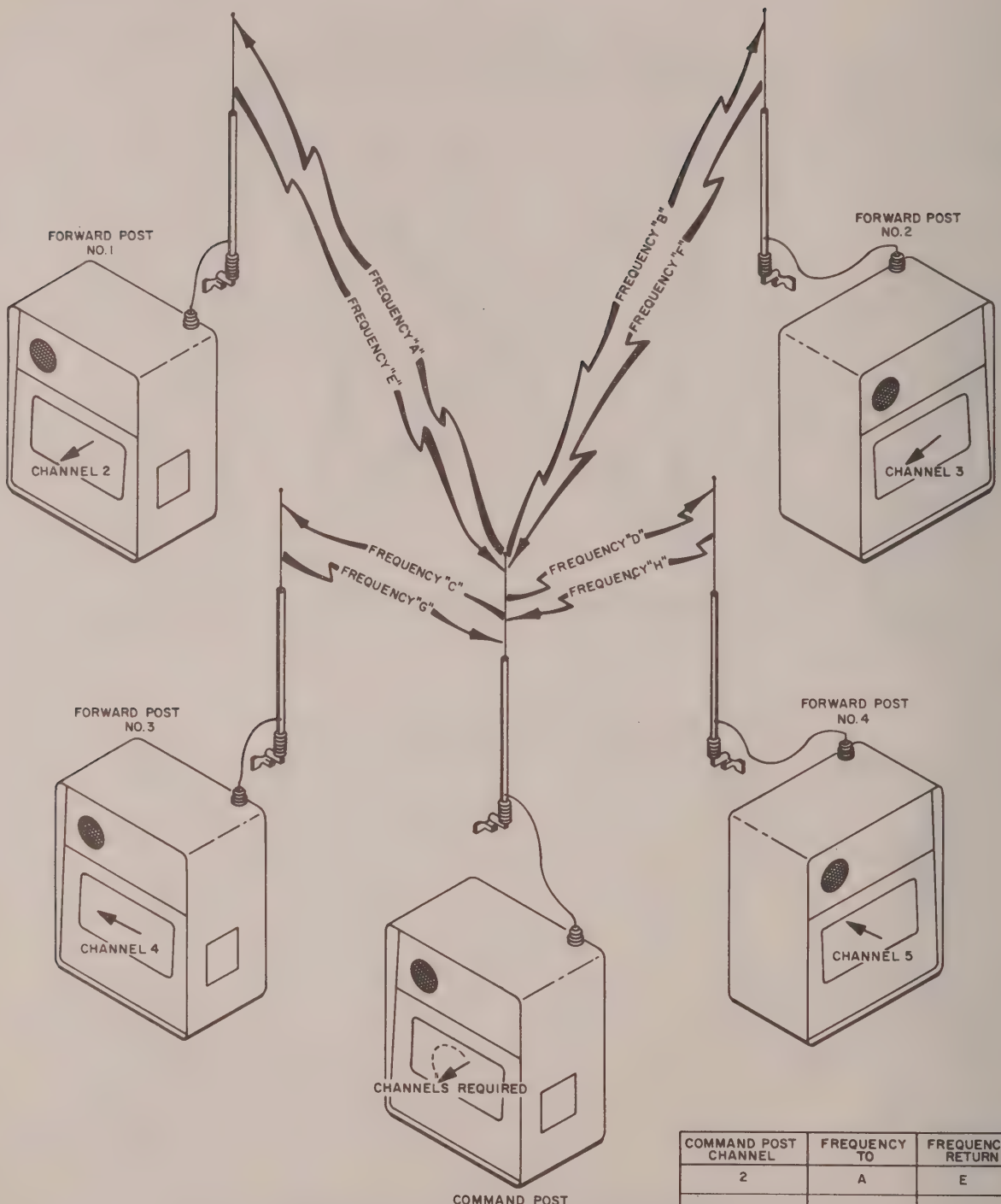


Figure 1–6. Typical-station system, any 1 transmit and others receive.



COMMAND POST CHANNEL	FREQUENCY TO	FREQUENCY RETURN
2	A	E
3	B	F
4	C	G
5	D	H

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Figure 1-7. Typical command post with 4 forward posts.

CHAPTER 2
INSTALLATION

Section I. SERVICE UPON RECEIPT OF EQUIPMENT

WARNING

The OA2 and OB2 tubes with this equipment contain radioactive materials. Read and follow the instructions givin in TB SIG 225 and AR 700-52.

2-1. Unpacking

(figs. 2-1 and 2-2)

a. Packaging Data. When packed for shipment, the components of Radio Set AN/SRC-32(*) and Remote Switching Control C-7270/SRC-32, except the antenna, are wrapped as described in chapter 11, and inclosed in an inner fiberboard carton. The carton is placed in a moisture-vaporproof barrier with a desiccant and humidity indicator, which is placed in an outer fiberboard carton. The outer carton is placed in a wooden packing case. Metal straps are applied around the outside of the wooden packing case. The antenna mast sections are packed in a spiral-wound fiber tube and placed in a wooden packing case, with metal straps applied around the outside of the wooden packing case (fig. 2-2).

b. Packaging Chart for Radio Set AN/SRC-32(*).

Case No.	Dimensions (in.) Length	Width	Depth	Volume (cu ft)	Unit weight (lb)	Contents
1 of 2	43	26	20 3/4	13.5	Approx 147	RT unit, handset, power supply, interconnection cables, antenna mount, base, and running spares.
2 of 2	184	4	4	1.7	Approx 12	Antenna mast, whip, and loading coil.

WARNING

Use caution when working with metal straps and carton staples. Serious cuts and infection may result from contact with edges of straps or with staple points in unpacking and subsequent handling of cartons. See qualified medical personnel immediately in case of an accidental cut.

c. Removing Contents of Case No. 1 (fig. 2-1). Follow the procedures outlined below when unpacking case No. 1.

(1) Cut the metal straps with a suitable cutting device or twist them with pliers until they break.

(2) Remove the nails from the wooden cover of the wooden packing case with a nailpuller or pry bar.

(3) Remove the wooden cover of the case and open the moisture-vaporproof barrier that covers the outer corrugated carton inside the case.

(4) Open the outer fiberboard carton and remove the three cartons containing the power supply, running spares, and antenna mount.

(5) Slit the closure tape and remove the metal staples holding the top flaps of the inner carton containing the RT unit.

(6) Fold back the top flaps of the carton.

(7) Do NOT remove the layer of cushioning material on top of the equipment.

(8) While holding the flaps open, roll the carton over to a bottom-up position, fold the flap on the side toward the *roll*, flat against the side of the carton.

(9) Lift off the carton.

(10) Remove any exposed cushioning material. Locate and save any envelopes, bags, or small cartons containing loose pieces.

(11) Return the equipment to a *faceup* position.

(12) Some equipments are packed for shipment mounted on plywood boards. Remove and save the shipping bolts and boards. To gain access to the shipping bolts in the RT unit, remove the outside case as follows:

(a) Unscrew the four knurled thumbscrews from the perimeter of the front panel.

(b) Release the four catches on the sides of the case, and carefully remove the case.

(c) After removing the shipping bolts, replace the case.

(13) Replace all cushioning and wrapping material in the empty carton.

(14) Consign the carton to storage for repackaging, or dispose of used shipping materials as directed by the commanding officer.

d. Removing Contents of Case No. 2 (fig. 2-2). Follow the procedures outlined below when unpacking case No. 2:

(1) Cut and fold back metal straips. Use a nailpuller to remove nails from one side of the box; remove side.

(2) Lift out spirally wound fiber tube.

(3) Remove the sealing tape and plastic plugs from both ends of the tube. Preserve the plastic plugs.

(4) Carefully withdraw the whip section from inside the mast by pulling on the paper tab, which is the end of the paper casing around the whip.

CAUTION

The whip section is of flexible material which can take a permanent bend; use care in handling.

(5) Remove and preserve the paper casing.

(6) Push on the mast at the end from which the whip was removed to expose the end of the loading coil.

(7) Withdraw the loading coil and mast assembly from the tube.

(8) Consign to storage for repackaging, or dispose of used shipping materials as directed by the commanding officer.

2-2. Checking Unpacked Equipment

a. Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report the damage on DD Form 6 (para 1-3).

b. See that the equipment is complete as listed on the packing slip. Report all discrepancies in accordance with AR 735-11-2. Shortage of a minor assembly or part that does not affect proper functioning of the equipment should not prevent use of the equipment.

c. If the equipment has been used or reconditioned, see whether it has been changed by a modification work order (MWO). If the equipment has been modified, the MWO number will appear on the front panel near the nomenclature plate. Check to see whether the MWO number (if any) and appropriate notations concerning the modification have been entered in the equipment manual.

Note. Current MWO's applicable to the equipment are listed in DA Pam 310-7.

2-3. Siting

The location of marine radio sets depends on the type of vessel, the assigned area of navigation of the individual vessel, and local harbor and coastal conditions. Weak or noisy signals may be expected if a radio set is operated near cliffs or near work vessels or harbor installations using power equipment. Closeness to other transmitting vessels may introduce signal

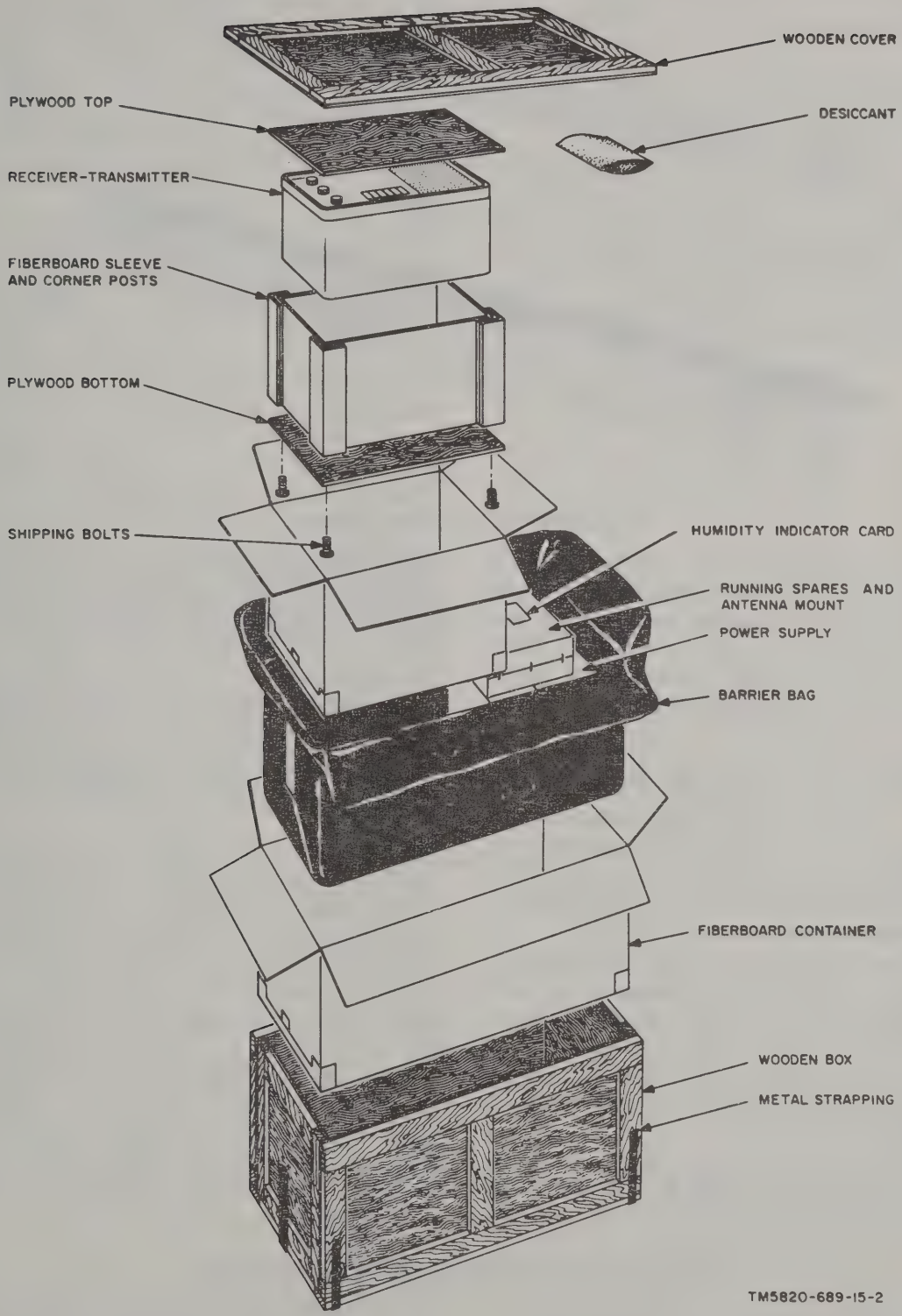


Figure 2–1. Packaging of radio set less antenna.

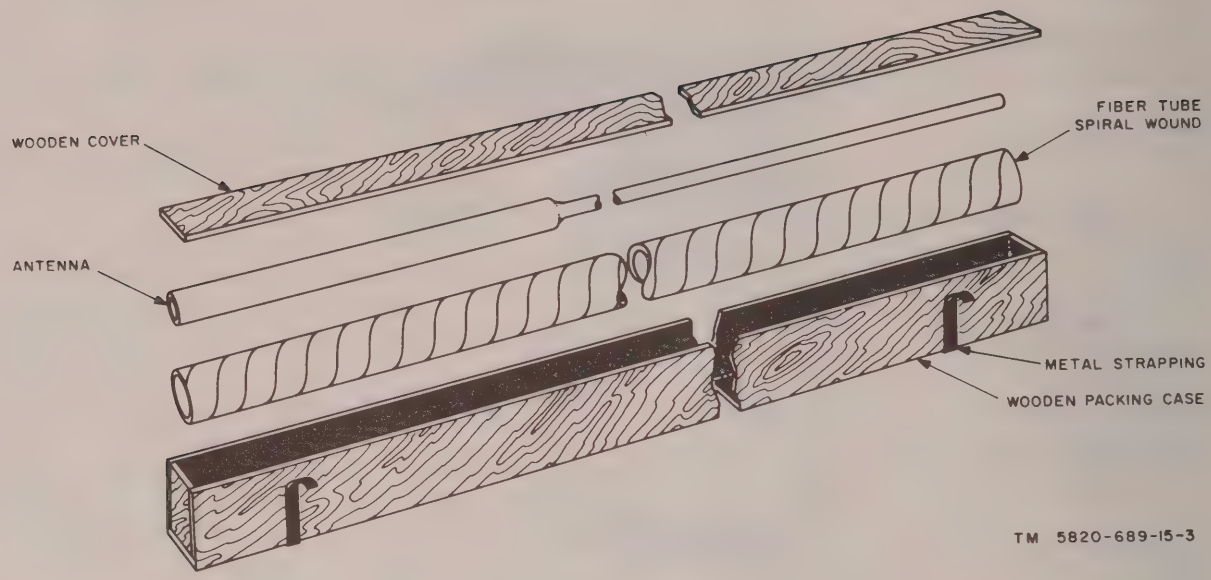


Figure 2–2. Packaging of antenna.

interference in the receiver. Operation under traffic-carrying or steel bridges is difficult because of local electrical interference and high absorption of radio frequency (RF) waves. Lowering of the antenna may be required when the vessel passes under a low bridge (para 1–7*c*).

2–4. Unit Location and Shelter Requirements

The best location for shipboard installation of the radio set varies with the type, construction, and physical layout of the using vessel. Refer to paragraphs 2–5 through 2–12 for installation and connection instructions.

a. Locate the RT unit in an area sheltered from weather elements and driven spray; avoid strong vibration areas and allow sufficient space for the operator to reach the controls as well as space to gain access for servicing. Try to keep the RT unit and the antenna as close together as possible.

b. The power supply must be within a dressed cable length of 9 feet from the lower left corner of the RT unit. Wherever possible, locate the power supply on the far side of a bulkhead or deck from the RT unit. Sufficient clearance should be provided around the power supply for maintenance access and cooling ventilation.

Warning: **The power supply must not be placed or operated in an explosive atmosphere such as gasoline or other inflammable fumes beuause of dynamotor brush and relay contact sparking.**

c. The antenna must be mounted as close to the RT unit as possible. The antenna base requires only a few inches of bulkhead or deck space for mounting, but the antenna must have a rigid support at least 3 feet above the base, which swivels in two directions. A holding latch block (mounting bracket) provides this support and can be released to permit lowering the mast. Where possible, provide deck space for lowering. An antenna clip also is supplied as part of the antenna base assembly. The clip should be installed to cradle the mast and hold it up off the deck when the antenna is lowered.

Section II. INSTALLATION AND CONNECTIONS

2–5. General

The installation of the radio set includes location and shelter selection as recommended in paragraph 2–4 for each unit, fastening of each unit to bulkhead, shelf top, or deck as required, and connection of cables.

Caution: **Locate the ship's electrical power service line that is to supply power to the radio set. See that the service is correct for the model being installed (para 1–5*d*). Open the safety switch or remove the fuses in the powerline. Tag the switch *DO NOT TOUCH* or *DO NOT CLOSE* to prevent closing of the switch by other personnel.**

2–6. Installation of RT Unit

a. Use the minimum clearance requirements shown in figure 2–3, and the recommendations given in paragraph 2–4 to select the proper bulkhead mounting site.

b. Use the mounting hole dimensions shown on figure 2–3 to locate and mark four mounting holes.

c. For mounting on wooden bulkhead, use machine or lag bolts with 1/4-inch diameter shanks and 7/16-inch diameter heads, and a length according to thickness. Set the bolts to within 1/4 inch of their full length. Mounting on metal bulkheads will require drilling and the use of 1/4-inch roundhead bolts of proper length.

d. Remove the outer case of the RT unit by unscrewing the four knurled thumbscrews on the perimeter of the front panel and releasing the latches on each side of the case. Four key-slot mounting holes on the RT unit backplate are now exposed.

e. Locate the two Romex connectors and the RT unit antenna feedthrough insulator in the bag of installation hardware. Install a connector into one of the 3/4-inch cable outlet poles on each side of the bottom lip of the RT unit backplate.

f. Suspend the RT unit on the four bulkhead mounting screws and tighten.

g. Install the feedthrough insulator as follows:

(1) Push against the chassis at the top while removing the 1/4–20 release nut at the top center; lower gradually onto the chains, clearing them from the sides.

(2) Install the feedthrough insulator, long side up, into the 5/8-inch diameter hole at the right side of the top lip of the backplate.

(3) Return the chassis to the closed position.

h. Connect case-mounted loudspeaker LS1 as follows:

(1) Connect the lugs on the ends of the speaker cable to the two terminals on TB5 (RCVR SPKR).

(2) Do not shorten the cable. The slack will be required when the case is moved aside for adjustments and maintenance. Whenever the case is replaced, dress the speaker cable slack into the bottom of the case to avoid pinching when the case is secured.

2–7. Installation of Power Supplies (fig. 2–4)

a. 24-Volt Dc Power Supply (PP–4598/SRC–32) or 110-Volt Dc Power Supply (PP–4599/SRC–32).

Note. These two power supplies are identical in size and mounting requirements.

(1) Use the minimum clearance requirements of figure 2–4, and the unit location and shelter requirements of paragraph 2–4 to select the proper deck or bulkhead mounting area within a dressed cable length of 9 feet from the lower left-hand corner of the RT unit.

(2) Use the mounting hole dimensions of figure 2–4, and mark the location of the four mounting screws.

(3) There are two mounting holes at each of the two flanged ends of the chassis. Orient the power supply so that the end without fuses is nearest the RT unit, and use 3/16-inch diameter wood screws or bolts, as appropriate, to fasten the power supply securely to the deck or bulkhead.

Note. If mounting the power supply on a bulkhead, make sure that the long sides of the power supply are vertical to the horizontal plane. This is necessary to assure that the generator shafts are horizontal (fig. 2–4).

(4) Remove the top cover of the power supply by removing the two screws at each end.

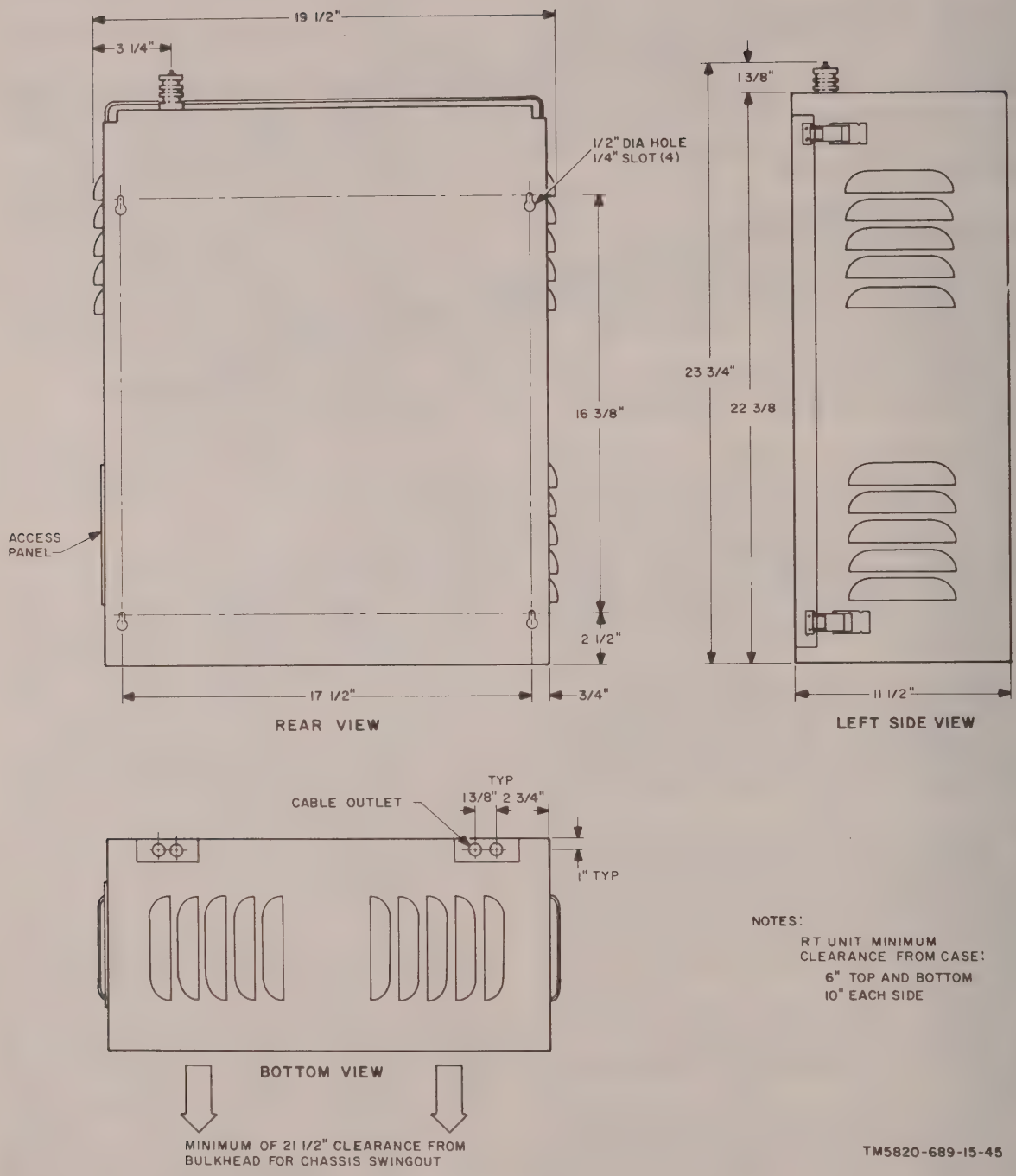


Figure 2–3. Mounting and clearance dimensions, RT unit.

b. 115-Volt Ac Power Supply (PP–4600/SRC–32).

(1) Use the minimum clearance requirements of figure 2–4, and the unit lo-

cation and shelter requirements of paragraph 2–4 to select the proper deck or bulkhead mounting area within a 9-foot dressed cable length from the lower left-hand corner of the RT unit.

(2) Use the mounting hole dimensions of figure 2–4 to mark location of the four mounting screws.

(3) Remove the baseplate from the power supply by removing the two screws on the flange at the fuse end of the chassis.

(4) Use 3/16-inch diameter flathead wood screws or machine screws of appropriate length depending on the type of mounting surface, to fasten the baseplate securely to the deck or bulkhead. For deck mounting, assure that the baseplate is oriented so that the fuse end of the chassis is toward the RT unit. In bulkhead mounting, mount the baseplate so that the lip formed by the bent-back flange is at the bottom (fig. 2–4).

(5) Slide the power supply onto the base and secure it with the assembly screws ((3) above).

(6) Remove the top cover by unscrewing the two screws at each end of the power supply.

2–8. Power Cable Connections
(figs. 2–5 and 2–8)

Note. The CX–10474/SRC–32 cable is used for either the 24-volt dc or the 110-volt dc power supply. The CX–10473/SRC–32 cable is used for the 115-volt ac power supply.

a. Add a jumper to connect terminals 1, 2, and 7 of TB1 at the upper right corner of the RT unit chassis (fig. 2–8).

b. Pull either end of the appropriate power cable up through the left-hand cable connector (para 2–6*e*).

c. Pull the cable ends through until the cable sheathing appears at the top of the connector. Tighten the connector.

d. Dress the cable ends to TB1.

e. Route the cable to the power supply and dress the cable ends to terminal board TB2 in the ac power supply, at the end near the fuses and, in the dc power supplies, at the end opposite the fuses.

f. Interconnect the terminals of terminal board TB1 on the RT unit and terminal board TB2 on the power supply (fig. 2–5).

Note. Since there is no 6M terminal on the ac power supply, install a jumper between terminals 6 and 6M of the RT unit.

g. Secure the power supply end of the cable under the cable clamp. Before tightening the clamp, dress the cable back so that it will not interfere with the relay.

2–9. Connection to Power Source
(figs. 8–5, 8–7, and 8–9)

a. The input power cable terminal board (TB1) for the 110-volt dc, 24-volt dc, and 115-volt ac power supplies is on top of the chassis at the end containing the fuses.

b. Use the following table of cable lengths and sizes. Connect the power supply to the vessel's power source.

Length (ft)	Cable size (AWG) 24-volt dc power supply	110-volt dc or 115-volt ac power supply
Up to 25	#4	#14
25 to 40	#2	#12
40 to 60	#0	#10
60 to 80	#00	#8

c. After installation of the cable, replace the power supply cover and close the safety switch or replace the fuses in the vessel's power system.

Note. See that the RECEIVER and TRANS. FIL. switches on the RT unit are at OFF.

2–10. Handset

a. Dress the handset cable up through the right-hand cable connector of the RT unit (para 2–6*e*).

b. Pull enough cable through to reach TB4 (LOCAL) on the lower left-hand side of RT unit chassis (fig. 2–10).

c. Connect the cable wires to the terminal board as follows:

(1) Black to B.

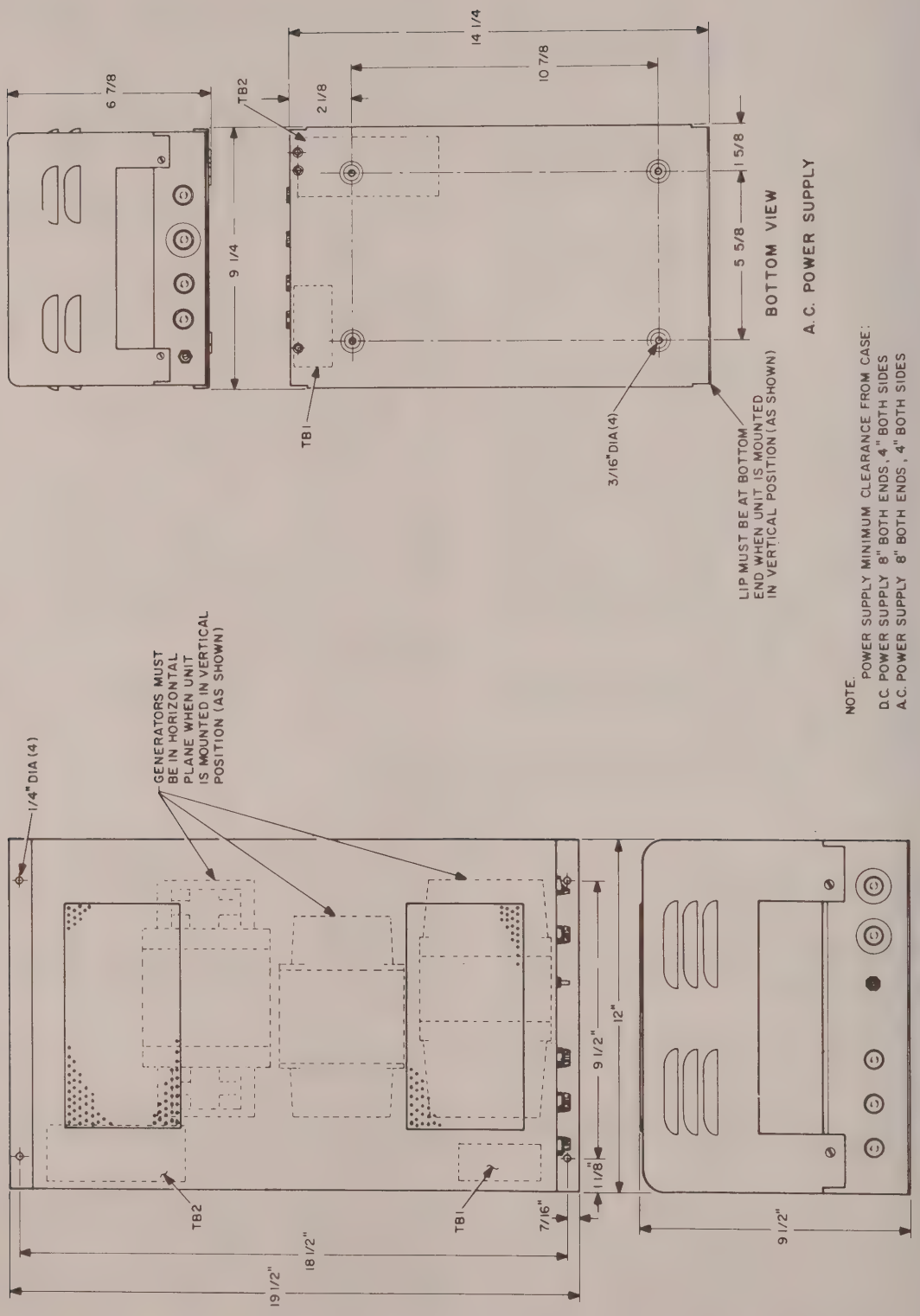


Figure 2-4. Mounting and clearance dimensions, power supplies.

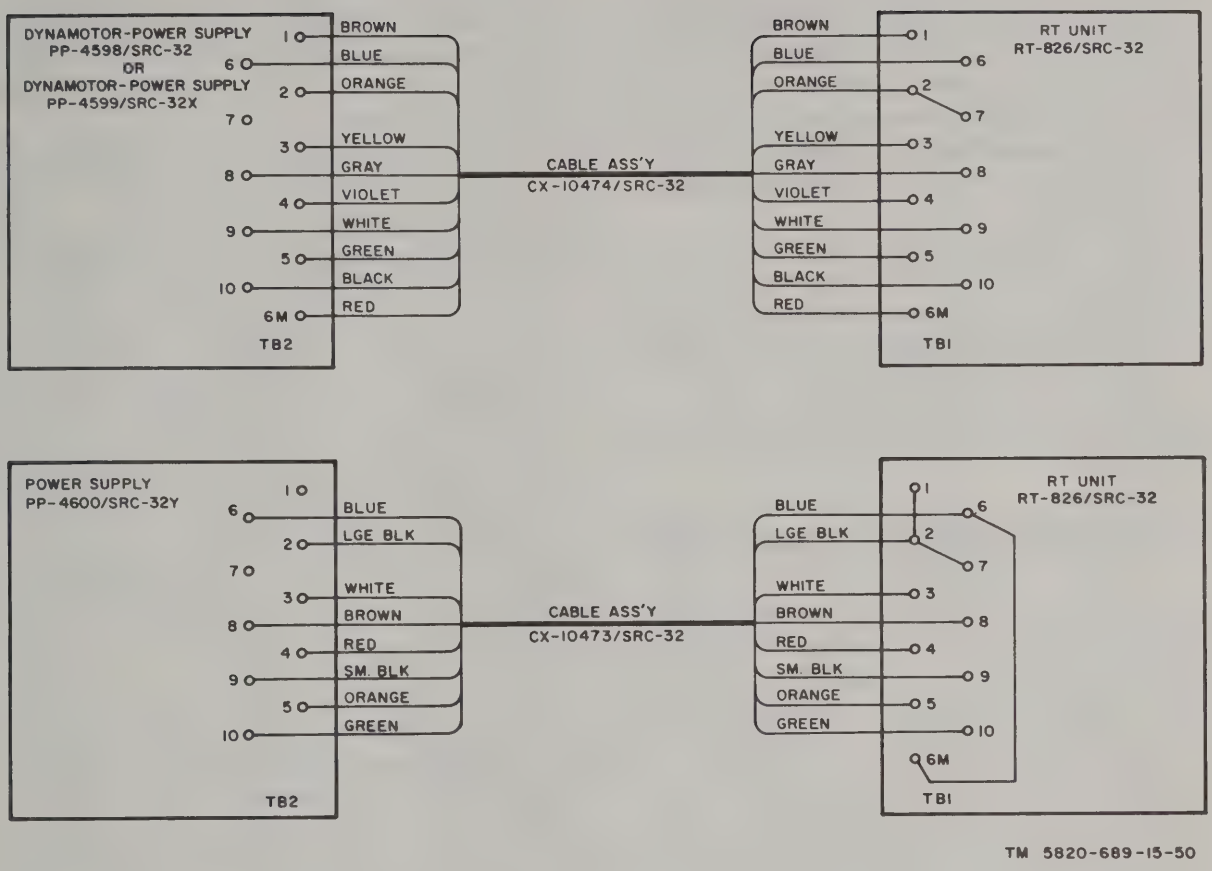


Figure 2–5. Power cable diagrams.

(2) White to W.
(3) Red to R.
(4) Green to G.

d. Secure the cable jacket under the clamp at the end of terminal board TB3 (fig. 2–10).

e. Allow hinging slack in the cable between TB3 and the cable connector; tighten the cable connector around the cable.

f. Mount the handset hanger in any spot near the RT unit with the two 8–32 self-tapping, panhead metal screws.

2–11. Installation of Antenna (fig. 2–6)

Install the antenna and mast base as follows:

a. In the bottom end of the mast, drill one 1/8—and one 11/64-diameter hole approximately 90° apart.

b. Install the solder lug assembly.

c. Slip the base insulator into the mast with the lug assembly positioned in the clearance slot as indicated, and match-drill the 11/64 hole for the self-tapping holddown screw in the insulator.

d. Put the mast aside.

e. Follow the requirements given in paragraph 2–4 in selecting the antenna mounting site that will allow the shortest possible antenna lead-in.

f. Position the flange of the mast base assembly at the site selected, and mark the four mounting hole locations.

g. Mount the mast base with 1/4-inch diameter, flathead wood screws or machine bolts, depending on mounting surface.

h. Loosely assemble the holding latch block around the mast near the bottom.

i. Raise the mast and temporarily support it in the desired upright position. Slide the holding latch block up to the attachment point (a minimum of 3 feet above base), and install it; use wood screws or bolts, as applicable, and a spacing block or bracket, if necessary. Be sure the holding latch opens by swinging up, not down.

j. Lower the mast and screw the whip into the top of the loading coil.

k. Secure the mast onto the base by driving the self-tapping holddown screw. Tighten the wingnut on the latch block.

l. Where an antenna stowed position is possible, install the storage clip as shown in figure 2–6.

2–12. Installation of Antenna Lead-In Cable (figs. 2–6 and 2–7)

The cable should be routed to avoid electrical noise sources as much as possible while keeping the length as short as possible. The entire lead-in routing must satisfy an additional requirement: The electrical capacitance to ground must be minimum and constant to enable and maintain transmitter tuning. Therefore, the cable should be supported and dressed as far as practical from conductive masses, such as decks, bulkheads, overheads, pipes, conduits, rails, masts, stanchions, wet wood, or cloth. The supports should be insulated standoffs installed at maximum intervals of 3 feet. After taking into consideration the above requirements, install the antenna lead-in made from the antenna lead-in cable packed with the RT unit.

a. Strip about 1/4 inch of insulation from one end of the cable and solder to the antenna solder lug (fig. 2–6).

b. Dress and firmly clamp or tie the cable to the bottom of the mast for strain relief.

c. Dress a slack loop in the cable to permit antenna movement in all possible directions on the swivel base.

d. Anchor the cable to the standoffs up to the bulkhead feedthrough insulator, if used.

e. If a passthrough type of insulator is used, dress the cable through it and attach to standoffs until the RT unit is reached.

f. If a feedthrough insulator of the center-stud type is used, attach the cable by stripping and soldering a lug to the wire, or strip 1 inch, twist and tin the wire, and then wrap a three-quarter turn around the stud between two flat washers; curl back 1/4 inch of the free end and tighten the nut.

g. Attach one end of the remaining cable to the other side of the feedthrough by repeating *f* above, and attach cable to standoffs until the RT unit is reached.

h. At the RT unit feedthrough insulator, cut off the cable, allowing 1 1/2 inch for stripping, tinning, and securing (*f* above), or attach with a solder lug with 3/16 hole.

i. Of the remainder of the cable, cut off 36 inches $\pm$1 1/2 for antenna connection inside the RT unit; about 35 inches for solder lugs, about 37 inches for tinning.

j. Solder two lugs to the stripped cable ends, one with a 3/16 hole and one with a #6 hole, or strip one end 1 inch for the coil terminal and the other 1 1/2 inch for the feedthrough; twist and tin both ends.

k. Attach the cable to the feedthrough insulator and dress through the grommet as shown in figure 2–7; secure to the antenna coil terminal.

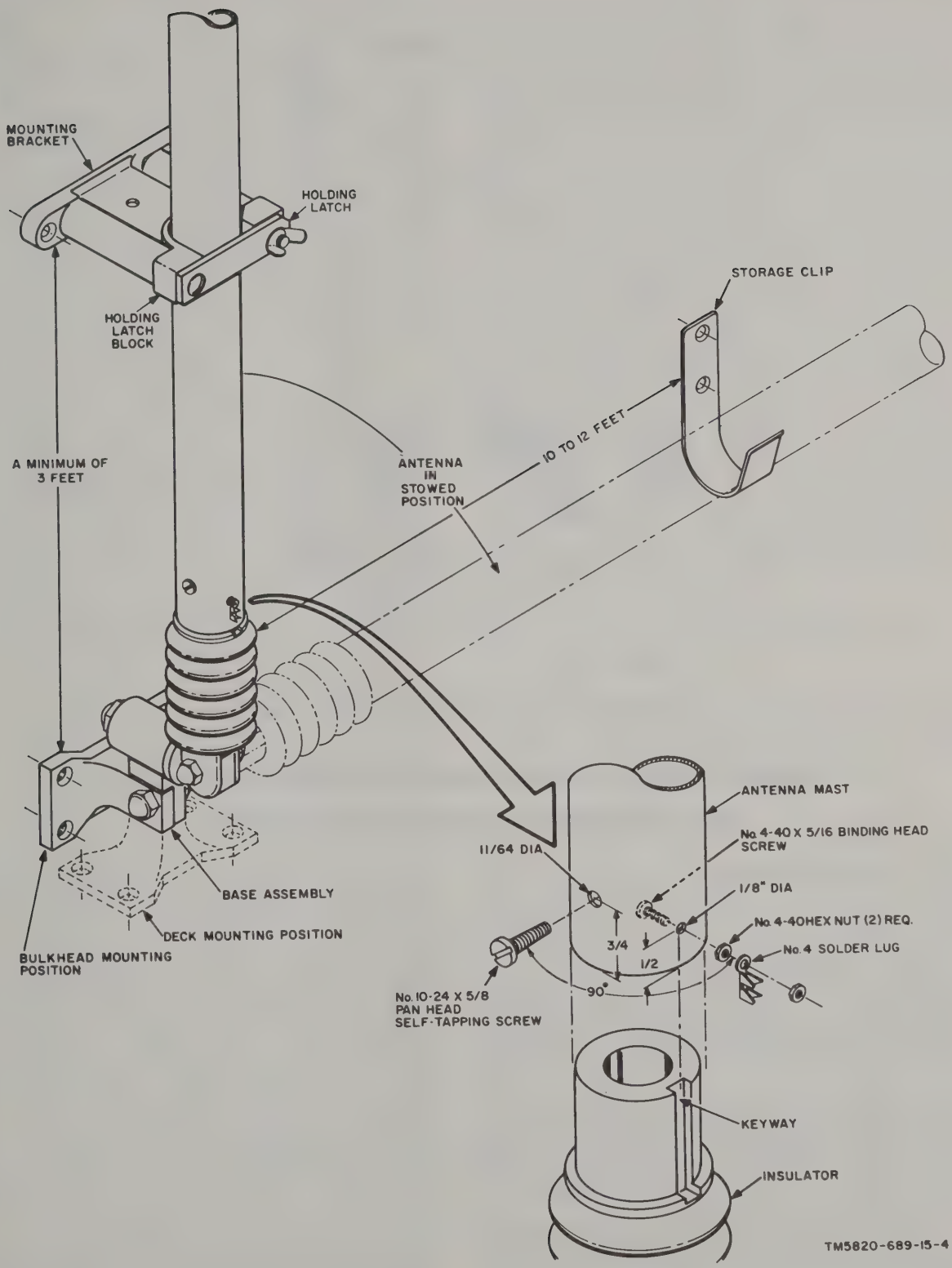


Figure 2–6. Antenna and mount installation.

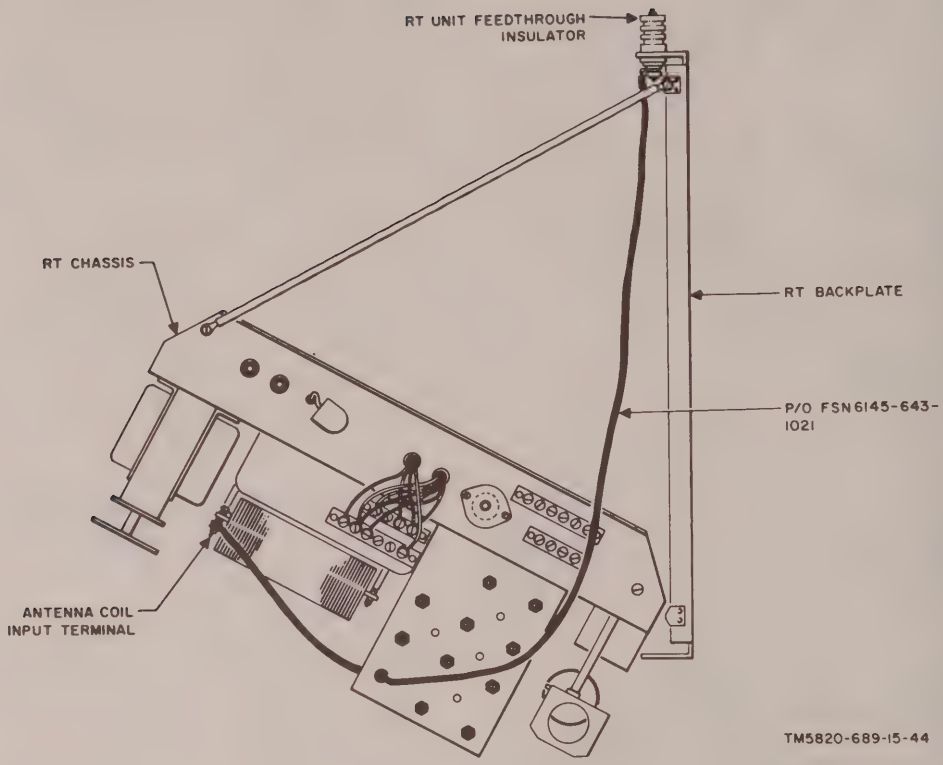


Figure 2–7. Internal antenna connection, RT unit.

Section III. INSTALLATION OF GROUNDING SYSTEM AND INITIAL RADIOFREQUENCY INTERFERENCE SUPPRESSION

2–13. Grounding System

Proper grounding of the RT unit is of utmost importance, since even a small ground resistance will waste appreciable power. The ground to which the RT unit must be connected may be the hull in a metal vessel, or a ground plate installed outside the hull on a nonmetallic vessel.

Note. All connecting surfaces should have the lowest possible electrical resistance. Use welding, silver-soldering, soldering or bright-cleaning, and bolting as mechanical strength and practicality dictate. Paint or refinish according to the refinishing instructions for the area of vessel.

a. RT Unit Flexible Ground Cable. A flexible ground cable must be installed in the RT unit to allow lowering of the chassis for access. A μ4 AWG lugged, extra flexible, tinned-copper cable 20 inches $\pm$1/2 hole-to-hole is recommended. The lug holes should be 1/4 inch. On metal vessels, if the bulkhead to which the RT unit is mounted, is metal and is an integral part of the vessel's structure (welded), attach the 20-inch flexible cable to RT unit ground stud E3 (fig. 2–9), dress down left side and under RT unit chassis across to the right side and attach to the lower right-hand mounting bolt. On wooden vessels or if the bulkhead is not a structural part of a metal vessel, feed one end of the 20-inch flexible cable up through the empty hole in the left side of the RT unit backplate lip and secure to grounding stud E3. Attach the other end of the cable to an extension ground cable

and attach the extension ground cable as follows:

b. Grounds and Attachment.

(1) For metal-hulled vessels, attach the ground lead to any point, near the receiver-transmitter, that is an integral part of the hull. Do not attach the lead to shelves, lockers, and similar objects that are merely bolted in place. At the point of attachment, be sure that the metal is clean. Use a hand grinder or emery cloth and polish until a bright metallic surface is reached.

(2) Wooden-hulled vessels require installation of a metal ground plate. The object is to achieve a copper plate area of 40 square feet minimum in contact with the water. For instance, install a plate approximately 5 by 8 feet, 4 by 10 feet, or 2 2/3 by 15 feet, below the waterline, depending on the shape of the hull, or a band of copper around the hull below the waterline is satisfactory. If the hull is 50 feet around at the selected depth, the band should be about 9 1/2 inches wide; if 100 feet, about 4 3/4 inches. Several threaded copper ground studs (1/4-inch minimum diameter) should be silver-soldered to the plate or band in an area as close as possible to the RT unit. Install the studs through the hull with a seaworthy seal. They should extend a minimum of 1/2 inch beyond a copper plate, match-drilled and secured from the inside over the studs and any sealing material around them. Where ground studs can be reached by a ground conductor of 10 feet (dressed length), bolt an extension ground conductor cable from the end of the flexible cable installed in the RT unit to one of the ground studs. Where the ground studs are more than 10 feet away, bolt two extension cables of required length to the end of the flexible cable installed in the RT unit, and run each to a stud.

c. Enlarging Ground Area. Enlarging the ground area may increase transmitted power and is necessary for adequate suppression of electrical interference. This is especially true for nonmetallic hulls. For these, and as applicable to metal vessels, all metal objects in the vicinity of the installation should be bonded (connected together and/or to ground). Such objects include rails, stacks, permanent halyards, plumbing, conduits, engine(s), tanks, metal masts, and the cases or frames of all dc electrical accessories and equipment, such as motors, generators, auxiliary power units, winches, tachometers, bilge pumps, transfer pumps, windshield wipers, and instrument panel. A factor in determining ground conductor size is the energy level of the noise source. For the same distance to ground, a large dc pump motor will normally require a much larger ground conductor than a small windshield wiper motor.

2–14. Initial Radio Frequency Interference Suppression

Note. Procedures for applying radiofrequency interference (rfi) suppression to ignition system and electrical generating systems are given below; for accessories, see paragraphs 2–20, 2–21, and 2–22.

a. Ignition Interference Sources and Suppression. Ignition system noise is generated in two places; the spark plug, where high voltage jumps across a gap to perform the ignition function, and in the breaker points. These breaker points are actually the contacts of a switch actuated by a rotating cam functioning to channel high voltage to the individual spark plugs. The electrical noise interference originating at this source is caused by arcing of the breaker points as they open and close. If the engine has a coil-type ignition system, insert 10,000-ohm, carbon-type suppression resistors in the ignition leads between the distributor cap and the spark plug. Optionally, the spark plugs can be replaced with resistor-type plugs. If this latter choice is made, be sure that the plugs selected are within the correct heat range and that the spark gap ad-

justments are in accord with the manufacturer's recommendation. Also, insert a 10,000-ohm suppression resistor in the lead between the coil and the distributor cap. These steps will normally reduce noise created by the plugs themselves. On a coil-type ignition system where power is derived from the vessel's battery, the lead to the ignition switch can be bypassed at the coil with a suitable coaxial capacitor, of 0.5 microfarad (μf), 50 volts, 50 amperes, such as a Cornell-Dubilier NFT–191 or a Sprague 48P18.

Note. Do not try to carry noise suppression beyond practical limits. More often than not, noise interference can be reduced to tolerable levels by simple procedures. To attempt to eliminate noise completely, can frequently result in reducing the performance of the engine.

b. Generating System Sources and Suppression.

(1) *Alternators with associated components.* Theoretically, alternators cannot create spark-type ignition interference because no make-break or sliding contacts are involved. However, static charges can build up on internal alternator elements to cause interference. Corrective procedure is to insert a coaxial, or feedthrough, capacitor in each alternator lead, between the alternator and the associated rectifier. An additional feedthrough capacitor should be connected in the *hot* output lead of the rectifier stack as a precautionary measure. Typical capacitor values are 0.5 μf, 50 volts, 50 amperes, such as Cornell-Dubilier NFT–191 or Sprague 48P18 types.

(2) *Generators.* In generators such as those used in the average automobile, generator noise is caused by the commutating brushes and/or by the voltage/current regulator which controls the device. Commutator noise is created by arcing of the brushes as they pass from one segment of the commutator to another. Regulator noise is caused by arcing of the regulator relay contacts as they make and break to control the field current regulating the amount of battery charge. Install a coaxial-type capacitor in the armature lead as close to the generator as possible. An additional capacitor should be connected from the battery terminal of the voltage regulator to ground. This can be a 1.0- or 2.0-μf unit of the metal-cased generator type with a pigtail lead.

***Caution:* Never install a capacitor between any field terminal of the regulator or generator and ground. Although this procedure may eliminate noise, it can also ruin the generator and regulator after only a few hours of service.**

Section IV. INSTALLATION OF TUBES, FUSES, AND CRYSTALS

2–15. Installation of Tubes and Fuses

The radio set is shipped with tubes and fuses installed. Crystals are packaged separately in a crystal kit. Check to see that the tubes are properly located (fig. 2–8). See that tubes, shields, and clips are properly seated and grid connections are secure. Check to see that each fuse holder on the apron of the power supply contains the correct type and value fuse according to the following chart:

Power supply type	Fuse identification F1	F2	F3	F4	F5	Figure number
24 volt dc	1.5A	.75A	1A	1A	1A	1–3
110 volt dc	15A	15A	5A	1A	1A	1–3
	MDL[a]	MDL[a]				
115 volt ac	20A	3A	20A	2A		1–4

[a]Slo-blo.

2-16. Installation of Crystals

The numbers *1* through *10* stamped next to the crystal sockets are the channels selectable by front panel control S1. There are 10 transmitter (TRANS. XTAL) crystal sockets in the bottom row of crystal sockets, and 10 receiver (RECV. XTAL) crystal sockets in the upper row (fig. 2-8). Install the crystals as follows:

a. Obtain from the responsible signal officer a list of the channels authorized to be activated and their corresponding transmitting and receiving frequencies. Receiving frequencies may be different from transmitting frequencies (para 1-8 and figs. 1-4, 1-6, and 1-7), but it is desirable to allocate transmitting frequencies in the same order as channel numbers to promote optimum transmitter tuning procedure. Transmitter initial adjustment procedure will also be simplified if channel allocations are made to frequencies the same as or close to the channel frequencies used for factory performance checks. Units are shipped factory-adjusted to the checkout frequencies listed in the following chart:

Channel number	Transmit frequency (kc)
1	2,079
2	2,092
3	2,182
4	2,274
5	2,392
6	2,648
7	2,670
8	2,718
9	2,740
10	3,562

b. Enter in pencil the information from *a* above in the appropriate rows and columns of the crystal chart (*e* below); draw a line through any unused channel rows.

c. Calculate and enter the frequency values for the *Receive osc (kc)* column by adding 455 kilocycles (kc) to the *Receive freq (kc)* for each channel to be used.

d. Select and install a crystal of the listed frequency into each corresponding assigned TRANS. XTAL socket number.

e. Select and install a crystal of the frequency listed in the *Receiver osc (kc)* column into corresponding assigned RCVR. XTAL socket number.

Note. The frequency in kc of each crystal is stamped on the crystal can.

Transmit freq (kc)	TRANS. XTAL socket	Ch No.	Receive freq (kc)	Add kc	Receive osc (kc)	RECV. XTAL socket
	1	1		455		1
	2	2		455		2
	3	3		455		3
	4	4		455		4
	5	5		455		5
	6	6		455		6
	7	7		455		7
	8	8		455		8
	9	9		455		9
	10	10		455		10

Note. If initial adjustments are not to be performed immediately after installation, temporarily replace the RT unit case.

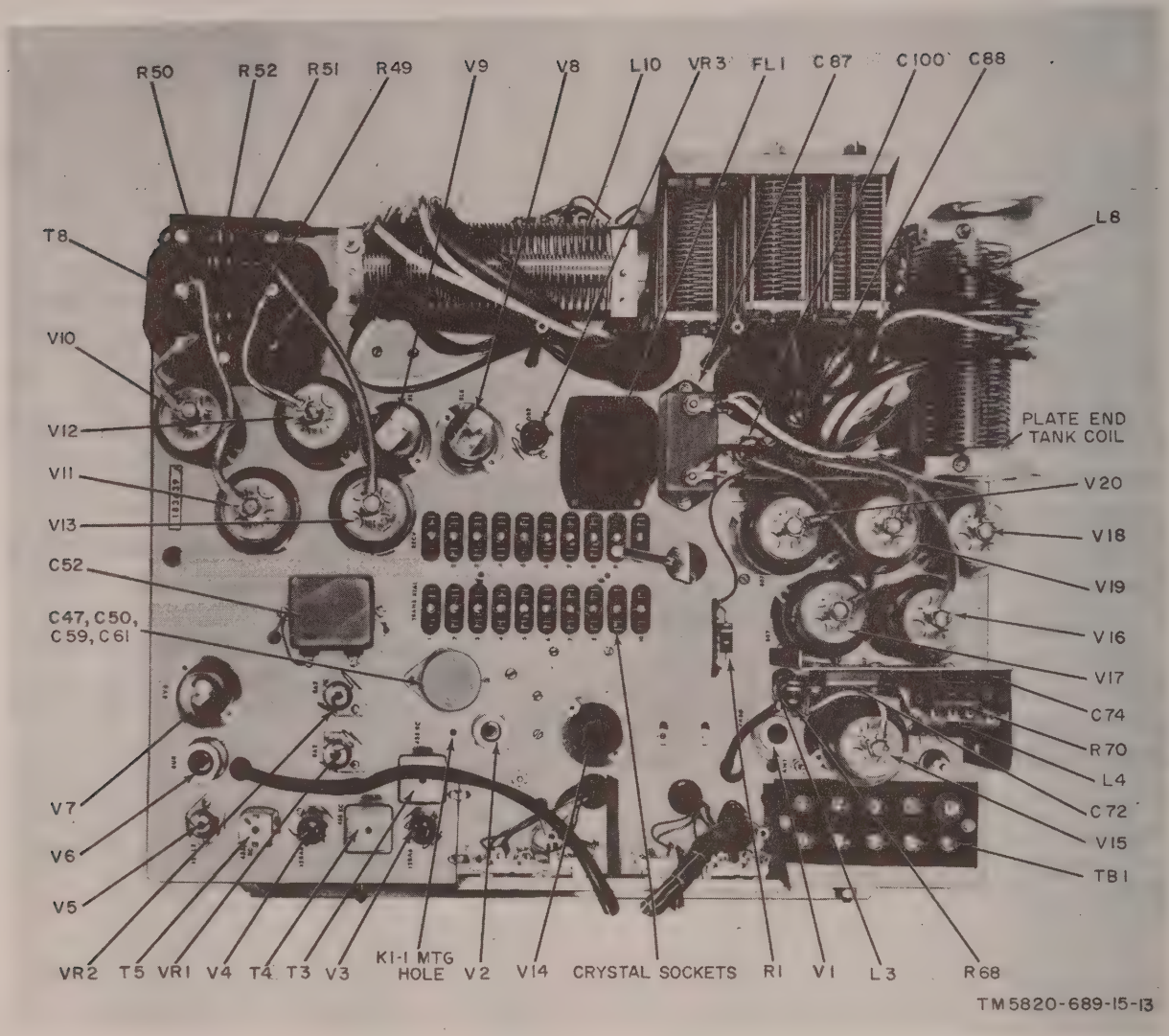


Figure 2-8. RT unit front view chassis, control panel removed.

Section V. INITIAL ADJUSTMENT OF EQUIPMENT

Note. The procedures described in this section should be performed by qualified maintenance personnel.

2-17. Extent of Initial Adjustments

Before the radio set can be used for the routine operation (paras 3-1 through 3-8) or for additional rfi suppression (paras 2-20, 2-21, and 2-2), the procedures described in paragraphs 2-18 and 2-19 must be performed. Whenever the assigned operating frequency of a channel is changed, these procedures must be repeated for that channel. For a description of operator's controls, refer to paragraph 3-2.

2-18. Adjustment of Transmitter

a. Remove the RT unit case as follows:

(1) Remove the four knurled thumbscrews from the perimeter of the front panel.

(2) Unfasten the four latches that secure the RT unit case, and carefully remove the case.

b. The numbered terminals on TRANS. INTERLOCK terminal boards TB6 and TB7 (fig. 2–9) denote transmit channel numbers. Use tinned copper wire to jumper together only those terminals corresponding to the channel numbers selected (para 2–16*e*). Make sure that the interlock return lead is also attached to one of the jumpered terminals.

c. Adjust the channels for minimum plate current as follows:

(1) Remove the antenna lead-in wire from the RT unit feedthrough terminal.

(2) Turn the RECEIVER switch to ON. Check to see that the receiver tubes warm up. If filaments do not light, turn off immediately, and check for possible errors in power cabling connections.

(3) Rotate the VOLUME control to OFF.

(4) Check to see that the CONTROL switch is at LOCAL.

(5) Make sure that meter test plug P1 (fig. 2–10) is in FINAL PLATE current test jack J3.

(6) Use a 1/2-inch wrench to loosen the shaft locks on the tank tuning capacitors (TANK COND., fig. 2–10) having the numbers of the assigned transmit channels.

(7) Turn the TRANS. FIL. switch to ON. Watch the panel meter during the 45-second warmup period. If any current is indicated, turn the TRANS. FIL. switch to OFF immediately and check for possible errors in the press-to-talk circuit cabling in the power supply and/or the handset connections. If no errors are found, refer to the troubleshooting procedures (paras 8–1 through 8–8).

(8) Turn the CHANNELS selector switch to the first assigned channel number.

(9) Hold a screwdriver in the shaft slot of TANK COND. with the selected channel number, key the transmitter by pressing the press-to-talk button (no audio signal into the handset transmitter), and quickly *rock* the capacitor (rotate back and forth) while watching the plate current indicated on the panel meter for the dip (minimum). If the dip is not found right away, or if the current starts to rise while the capacitor is not being rotated, release the button and wait a minute or so before repeating. The dip should occur with the TANK COND. at half-mesh ±30° (fig. 2–10) with the factory settings of the tank coil taps. The factory tap locations are shown in the chart below. The turn count is from the plate end of the tank coil (fig. 2–8). The listed colors are of the wire insulation, not the sleeving. If the dip on a channel occurs at an out-of-tolerance capacitor position, move the corresponding coil tap and *redip*.

Channel	Wire color	No. of turns
1	Brown	25
2	Red	25
3	Orange	23
4	Yellow	21
5	Green	20
6	Blue	17
7	Violet	16
8	Gray	16
9	White	16
10	Black	17

Note. 1. Releasing the press-to-talk switch removes the high voltages from the RT unit and power supply. It is not necessary to turn off the TRANS. FIL. switch; however, reasonable care should be used to avoid contact with the receiver B+ (low voltage B+) and associated components.

Note 2. The coil tap movement to correct for too little capacitor mesh is toward the plate end and vice versa.

(10) After the dip is located, leave the TANK COND. set near dip position. Do not hold the button down longer than necessary for the adjustment.

(11) Move the CHANNEL switch to the next assigned channel.

(12) Repeat (9) and (10) above.

(13) Repeat (11) and (12) above.

d. Adjust modulation bias as follows:

(1) Move meter test plug P1 from the FINAL PLATE jack (J3) to the MOD. PLATE jack (J1).

(2) Key the transmitter (press the press-to-talk switch) and observe the panel meter. It should indicate 150 milliamperes (MA) ±10. Perform (3) below if required.

(3) To set the MOD. IDLE current control, adjust the power supply modulation bias control (fig. 1–3 or 1–4).

e. Check the final grid drive current on each selected channel as follows:

(1) Move meter test plug P1 from MOD. PLATE jack J1 to FINAL GRID jack J2.

(2) Key the transmitter and observe the meter for an indication of 25 ma ±10.

(3) On channel 10, adjust coil L5 (fig. 2–11) for peak grid drive current.

f. Adjust antenna loading as follows:

(1) Reconnect the antenna lead-in to the RT unit feedthrough insulator.

(2) Move meter test plug P1 from FINAL GRID jack J2 to FINAL PLATE jack J3.

(3) Check the plate current of each channel by keying the transmitter. It should be 400 ma ±40. Note any channel in which the current is out of tolerance.

(4) Adjust a channel with low current as follows:

(*a*) Move the corresponding tap on antenna loading coil L10 (fig. 2–8) to obtain maximum (peak) current. Moving the tap 2 turns should change the current approximately 25 ma. If the peak current is not in tolerance, decrease the antenna load capacitance.

Note. The lead-in must be disconnected and the plate must be *redipped* after each change of antenna load capacitance (*c*(9) and (10) above).

(*b*) Change the amount of capacitance by adding or removing jumpers and/or moving the lugged wire (of the color corresponding to the channel number) to a different terminal on ANTENNA LOAD terminal TB9A or TB9B (fig. 2–10). The capacitance values at the terminals are printed on the apron adjacent to the terminal boards.

(*c*) *Redip* the plate current.

(*d*) Reconnect the lead-in and repeak the antenna load current.

(5) Adjust a channel with high current by increasing the antenna load capacitance in accordance with the procedure given in (4)(*b*), (*c*), and (*d*) above.

(6) Note that adequate loading causes the ANTENNA panel lamp to glow.

(7) Tighten the tank coil condenser shaft locks.

(8) When all channels are properly loaded (unmodulated transmitter (continuous wave (cw)) plate current of 400 ma ±40), check modulated carrier antenna current.

g. Perform the modulated carrier check by keying each channel in turn and talking into the handset transmitter in a moderately loud voice. The antenna current should increase the intensity of the ANTENNA lamp. Loud speech or a piercing whistle should cause a correspondingly greater increase in lamp brilliance.

2–19. Adjustment of Receiver

a. Turn the TRANS. FIL. switch to OFF.

b. Set the CHANNEL switch to 1.

c. Set the SQUELCH control to OFF.

d. Advance the VOLUME control to a moderate speaker level.

e. Turn the IF GAIN control (fig. 2–9) fully clockwise.

f. When no signal is being received, adjust the channel 1 RF trimmer capacitor (RCV'R RF, fig. 2–9) for maximum noise (static) from the speaker. The RF trimmer capacitors are identified by adjacent numbers corresponding to the CHANNEL numbers. Make sure that the capcitor is adjusted to the correct noise peak of the two possible peaks. Turn the trimmer screw in (clockwise) snugly (not

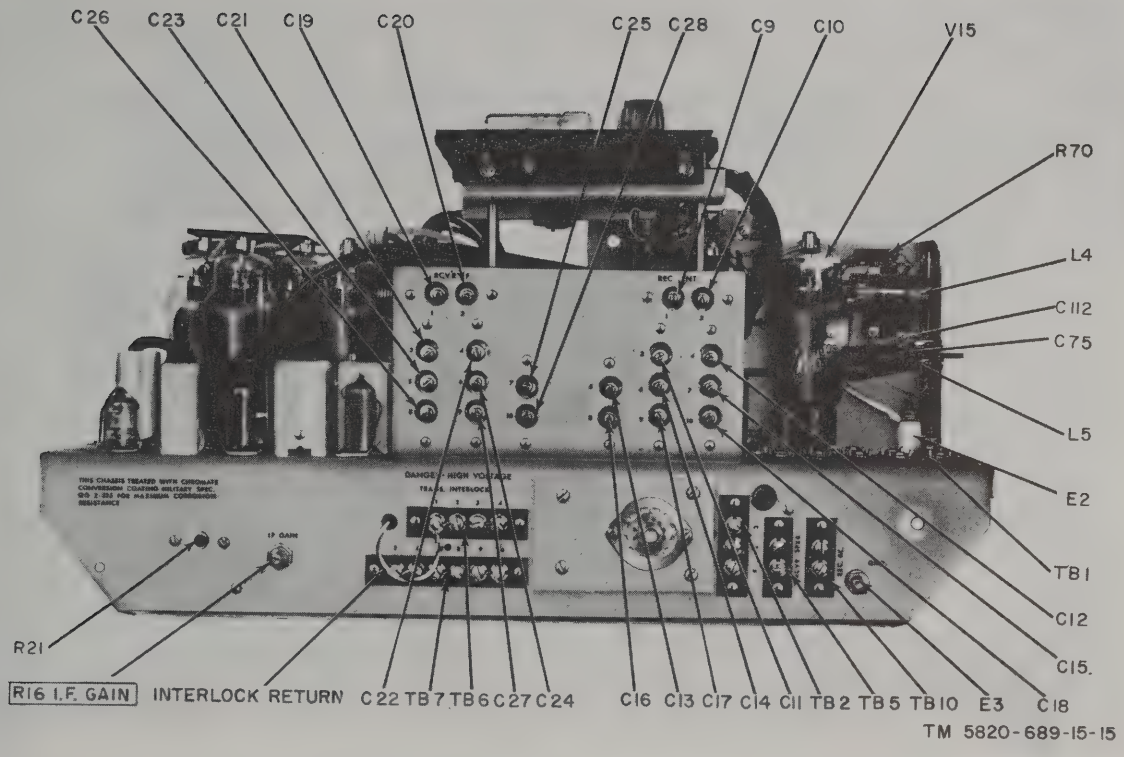


Figure 2–9. RT unit, left side chassis.

tight), and then back it out to the first noise peak position.

g. Adjust the channel 1 REC. ANT. trimmer capacitor (fig. 2–9), identified by the adajcent corresponding CHANNEL number, by performing the same procedure as for the RF trimmer.

h. Repeat *f* and *g* above for the remaining channels.

j. Make the SQUELCH control adjustments as follows:

(1) Remove the lead-in cable from the feedthrough insulator.

(2) Advance the VOLUMNE control to a moderate noise level from speaker.

(3) Advance the SQUELCH control clockwise from OFF until the receiver just quiets (noise disappears).

(4) Reconnct the lead-in cable.

(5) Turn the CHANNEL switch until the channel producing the loudest noise in the absence of a signal is selected.

(6) Further advance the SQUELCH control until receiver again *quiets*. If quieting does not occur before the control reaches about three-quarter clockwise rotation, set at the three-quarter position and perform (7) below.

(7) With a small screwdriver, turn R21 (on left chassis apron (fig. 2–9) counterclockwise until the noise disappears.

k. Replace the RT unit case (fig. 1–2) as follows:

(1) Place the case in position over the RT unit and secure the four latches.

(2) Replace the four perimeter knurled thumbscrews.

l. Remove the cover plate (fig. 1–2) and redip the final tank circuits. Follow the procedures given in paragraph 2–18*c*.

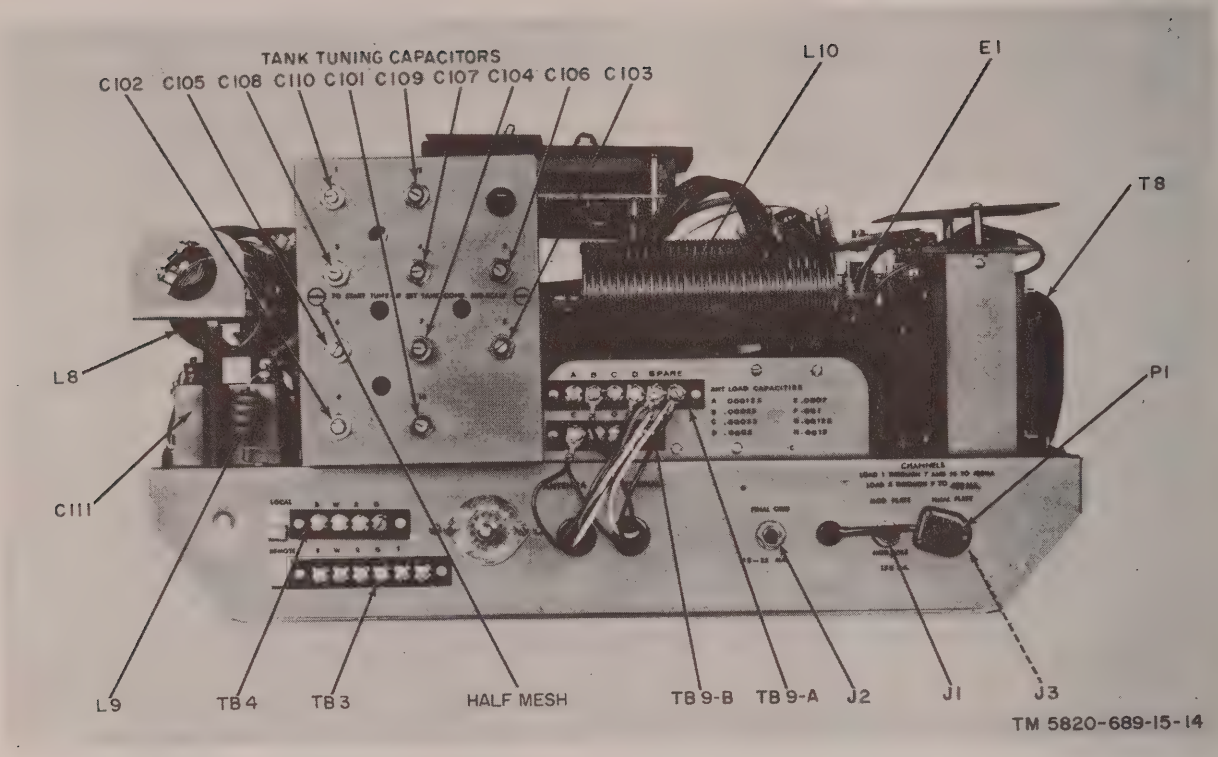


Figure 2–10. RT unit, right side chassis.

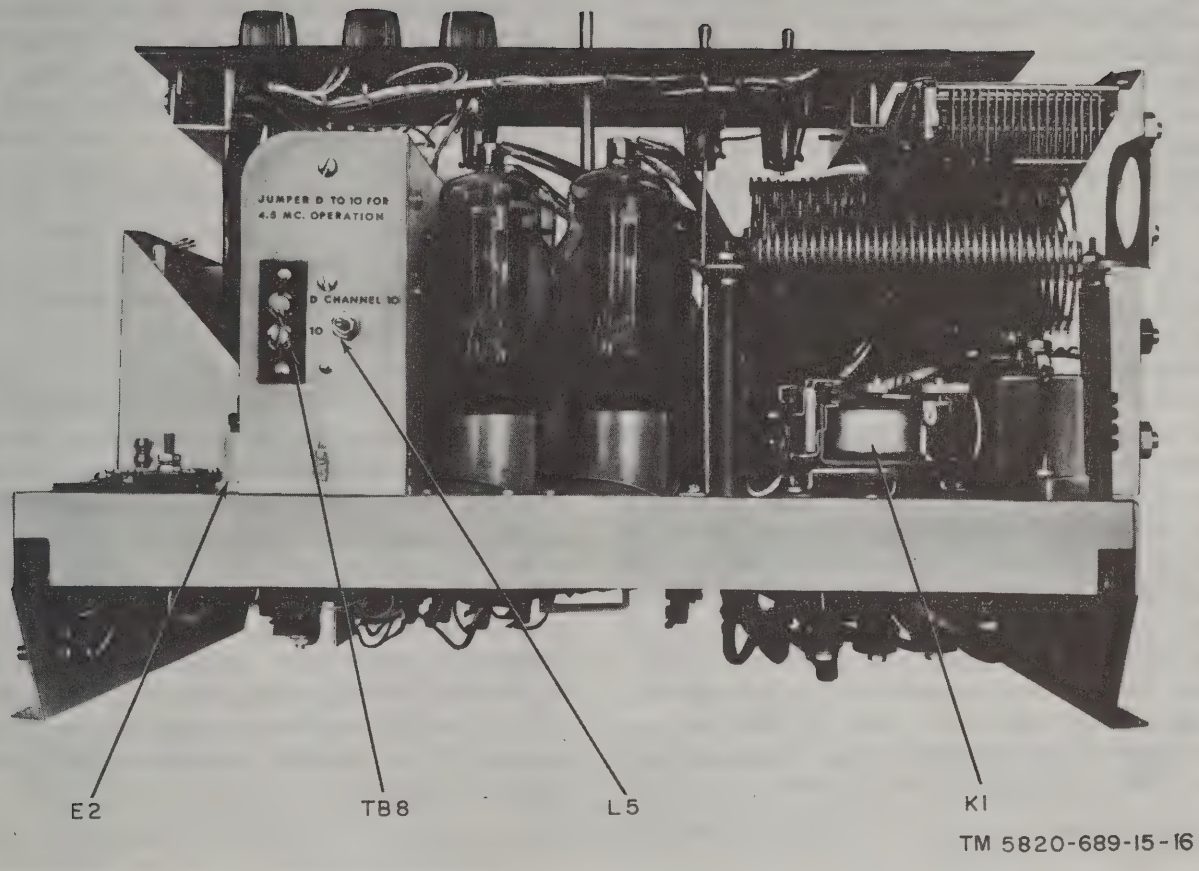


Figure 2–11. RT unit, bottom end chassis.

Section VI. ADDITIONAL RFI SUPPRESSION PROCEDURES

2–20. Identifying Noise Sources

Use the receiver as a monitor for identifying electrical noise sources in the accessory group (para 2–13*c*).

a. Turn only the RECEIVER switch to ON.

b. Turn the SQUELCH control to OFF.

c. Select an opeating CHANNEL over which no signal is being received at the time.

d. Advance the VOLUME control until a moderate level of background noise (static) is heard.

e. With the engine off, turn on every accessory on the vessel, one by one. Do this methodically, moving from bow to stern.

f. Note each accessory which produces noise in the radio over the *normal static level.*

2–21. Suppressing Noise Sources

a. Noise originating in accessories may usually be removed by connecting a generator-type capacitor from *hot* input terminal of the appliance to ground. Electric tachometers are an exception. To find whether this type of tachometer is causing the interference, the instrument should be disconnected to see whether the noise stops. The only effective cure for tachometer interference is to substitute shielded wire for regular leads and to securely ground the outer shield.

b. Occasionally, wires running around the boat will act as *pipes* carrying electrical noise disturbances from one part of the boat to another. In this regard, the ignition switch and its associated wiring is a frequent offender. The same is often true of accessories and accessory switches supplied from a common bus stud(s) behind the instrument panel. Where possible, wires from the ignition switch should be run in shielded cables; also, a 0.5- or 1.0-μf, generator-type capacitor installed from each such stud to the grounded panel (para 2–13) will usually reduce rfi, since it is seldom possible to eliminate all *noise* completely at its source. *For example,* after all normal rfi suppression procedures have been effectively performed, noise *clicks* or *pops* from the receiver when the engine is running can be caused by high-tension, spark plug leads radiating like transmitting antennas. With adequate suppression in primary ignition circuits and other low voltage wiring, spark noise may still appear in the receiver. In this case, it is likely that spark plug lead radiation is entering the receiver by some path such as the antenna lead-in cable. To test for this, remove the lead-in from the feedthrough insulator and, with the case on, short the feedthrough terminal to the nearest ground. The noise level should drop back to that of normal static.

c. The most practical cure for high-tension lead radiation is a well-bonded metal inclosure for the engine. If it is already metal inclosed, lack of adequate enclosure member bonding is indicated. Some engines are so constructed that a metal cover or tube can be installed over or around a bundle, or bundles, of spark plug leads. Either or both procedures are recommended to reduce *spark noise before* it gets into other wiring systems and/or the RT unit itself.

2–22. Checking Effectiveness of Procedures

Reasonable effort should be made to reduce rfi to the lowest possible level, because a low received level indicates the possibility of a *clean* transmitted signal. Use the receiver as a monitor to advance the VOLUME as the *noise* is progressively reduced by the procedures. At the conclusion of the suppression procedures, check each operating channel, in the absence of received signal, with and without engine and accessories operating. It is possible for certain noise sources to affect some channels more than others.

CHAPTER 3

OPERATING INSTRUCTIONS

Section I. OPERATOR'S CONTROLS AND INDICATORS

3-1. Damage From Improper Settings

No damage will result from improper settings of operator's controls; however, loss of communication can result from improper setting of certain controls. This section locates, illustrates, and describes the use of the controls of Radio Set AN/SRC-32(*).

3-2. RT Unit Controls
(fig. 3-1)

The following chart lists the panel indicators and controls and their functions of Receiver-Transmitter, Radio RT-826/SRC-32. The press-to-talk switch (transmitter keying) is on Handset H-272/SRC-32.

Control or indicator	Function
RECEIVER switch	In the ON position, energizes all power supply circuits necessary for the operation of the receiver section.
Receiver filament lamp	Indicates that the receiver section is on by illuminating the CHANNELS switch through slit in the side of the mask.
VOLUME control	Adjusts the audio output of the receiver section.
SQUELCH control	In the OFF position, disables the squelch and the automatic noise limiter (ANL) receiver functions. In the A.N.L. position, it enables only the ANL function. Continued clockwise rotation increases the level of signal required to overcome the squelch action.
CHANNELS control	Simultaneously selects received frequency and transmitted frequency of channel indicated.
TRANS. FIL. switch	In the ON position, energizes the transmitter filaments and enables the transmitter ready circuits.
Transmit filament lamp	Indicates that the TRANS. FIL. switch is at ON.
Transmitter meter	Indicates dc in one of three internally selectable circuits: the ransmitter final cathode, the transmitter final grid, and the modulator final cathode.
ANTENNA indicator	Indicates the relative transmitter antenna drive current.
CONTROL switch	Transfers three functions from LOCAL to REMOTE as indicated. These functions are: the audio output of the receiver, the speech input to the modulator, and transmit enable Adds remote channel selection in REMOTE position; other remote functions enabled are described in chapter 7.

Note. The handset press-to-talk switch disables the receiver and activates the transmitter when held down.

3-3. International Emergency Frequency

Channel 3 of the radio set is tuned to 2,182 kc, which is the international distress and calling frequency. This frequency is allocated by

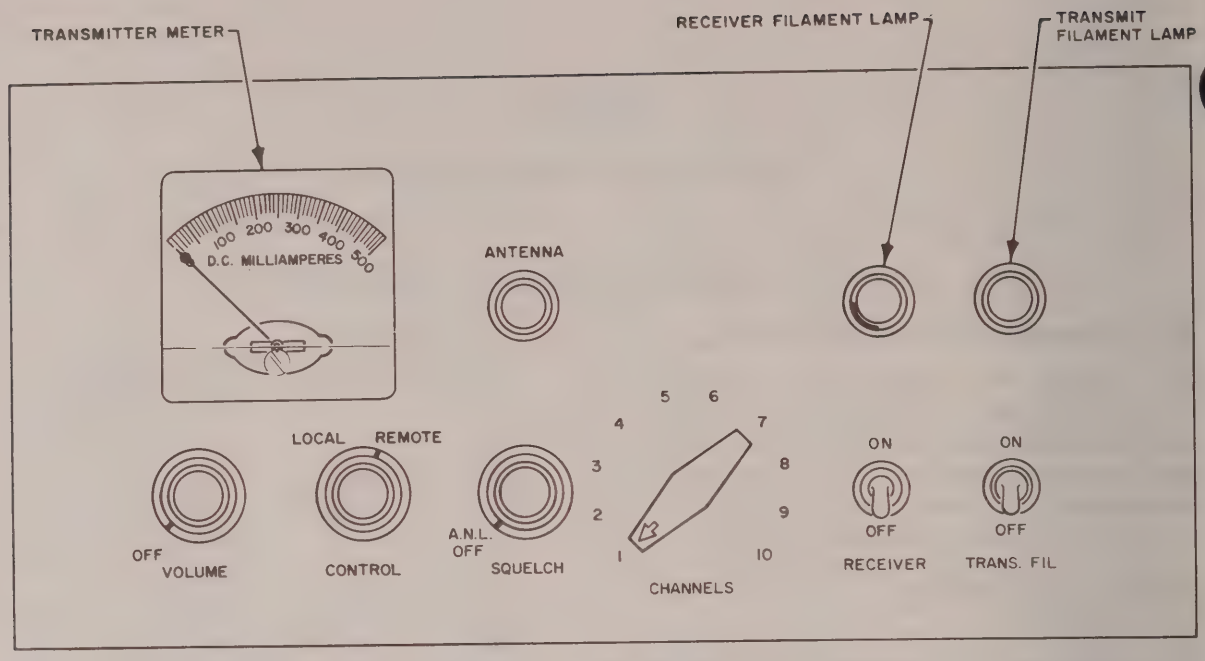


Figure 3–1. RT unit, operator's controls and indicators.

international regulations for emergency service as follows:

a. Making emergency transmission by giving the international distress call *MAYDAY* and identification of the transmitter location. This frequency is monitored and used for reply by agencies such as the Coast Guard, harbor patrols, commercial shore stations, and by other vessels.

b. Monitoring to receive emergency calls from other transmitters; an appropriate response to distress calls will be ordered by the responsible communications officer.

Section II. OPERATION

3–4. Receiver Operation

a. Turn the RECEIVER switch to ON (warmup time 30 seconds nominal).

b. Rotate the CHANNELS control knob to the desired channel number.

Note. On radio sets equipped with curved *arrow* decal, always rotate the CHANNELS control knob counterclockwise *only.*

c. Set the CONTROL switch to LOCAL.

d. Adjust the SQUELCH control to A.N.L. or OFF.

e. Adjust the VOLUME control to the desired level from the speaker or handset receiver.

Note. Quiet monitoring is the elimination of background noise or static in the absence of signal. When no signal is being received on the frequency (channel) being monitored, turn the SQUELCH control clockwise until the noise just disappears.

Caution: **Do not turn the control farther than necessary to eliminate the noise, or weak signals will not be heard.**

3-5. Transmitter Operation

a. If the rceivr is not on, perform the procedures given in paragraph 3-4*a*, *b*, and *c*.

b. Set the TRANS. FIL. switch to ON.

Note. This may be done immediately after the porcedure in paragraph 3-4*a* to shorten warmup delay.

c. Allow a 45-second minimum warmup, key the transmitter by pressing the handset switch, and speak the message into the handset transmitter. Release the handset switch at the end of transmission; the radio set reverts to receive automatically.

3-6. Standby Operation, Transmit and Receive

a. Full Standby. For full standby operation, perform the procedure given in paragraphs 3-4 and 3-5, except **do not key the transmitter.**

b. Receive Only. For receiver standby operation (monitoring), perform the procedure given in paragraph 3-4.

3-7. Radio Set Operation from Remote Service Periods

Control, Remote Switching C-7270/SRC-32 (RC unit) is available for use with Radio Set AN/SRC-32(*) as auxiliary equipment. Operation of a radio set equipped with an RC unit is the same as that for LOCAL operation described in the preceding paragraphs; operation from the remote location is described in chapter 7.

3-8. Shutdown Procedure

To shut down the radio set, turn both the TRANS. FIL. and RECEIVER switches to OFF. Leave the CHANNELS switch in the last position used.

CHAPTER 4

OPERATOR'S MAINTENANCE INSTRUCTIONS

Section I. GENERAL INSTRUCTIONS

4-1. Scope of Operator's Maintenance

The maintenance duties assigned to the operator of the AN/SRC-32(*) are listed below, with a reference to the paragraphs covering the specific maintenance function.

a. Operator's daily preventive maintenance checks and services (paras 4-4 and 4-5).

b. Operator's weekly preventive maintenance checks and services (para 4-6).

c. Cleaning (para 4-7).

d. Troubleshooting (para 4-8).

e. Repairs and adjustments (para 4-9).

4-2. Items Required for Maintenance

Only the following items are required for maintenance:

a. Cleaning Compound (FSN 7930-395-9542).

b. Cleaning cloth (FSN 8305-267-3015).

c. Sandpaper No. 000 (FSN 5350-271-7939).

Warning: **Prolonged breathing of cleaning compound is dangerous; make sure that adequate ventilation is provided. Cleaning compound is flammable; do not use near a flame. Avoid contact with the skin; wash off any that spills on your hands.**

4-3. Preventive Maintenance

Preventive maintenance is the systematic care, servicing, and inspection of the equipment to prevent the occurrence of trouble, to reduce downtime, and to assure that the equipment is serviceable.

a. Systematic Care. The procedures given in paragraphs 4-4, 4-5, 4-6, and 4-7 cover routine systematic care and cleaning essential to proper upkeep and operation of the equipment.

b. Preventive Maintenance Checks and Services. The preventive maintenance checks and services charts (paras 4-5 and 4-6) outline functions to be performed at specific intervals. These checks and services are to maintain Army electronic equipment in a combat serviceable condition; that is, in good general (physical) condition and in good operating condition. To assist operators in maintaining combat serviceability, the chart indicates what to check, how to check, and the normal conditions; the *References* column lists the illustrations, paragraphs, or manuals that contain detailed repair or replacement procedures. If the defect cannot be remedied by the operator, higher category maintenance or repair is required. Records and reports of these checks and services must be made in accordance with the requirements set forth in TM 38-750.

Section II. OPERATOR'S MAINTENANCE

4-4. Preventive Maintenance Checks and Services Periods

Daily checks and services must be performed on the AN/SRC-32(*).

a. The daily preventive maintenance checks and services chart given in paragraph 4-5 specifies the checks which must be made during the following periods:

(1) Before the craft starts on a mission.
(2) When the equipment is initially installed.
(3) When the equipment is reinstalled after removal for any reason.

b. If the equipment is being maintained in a standby condition, perform the daily checks and services before the equipment is returned to service.

c. Paragraph 4–6 specifies additional checks and services that must be performed once each week.

4–5. Operator's Daily Preventive Maintenance Checks and Services Chart

Sequence No.	Item to be inspected	Procedure	References
1	Exterior surfaces	Clean the RT unit case, panel, and meter glass.	Para 4–7.
2	Antenna system	Inspect insulators, lead-in cable, antenna, and connections for dirt, damage, looseness, and short circuits. Clean, tighten, and clear as required. Refer any damaged parts to higher category maintenance for repair or replacement.	
3	Knobs and switches	Observe that the action of each knob and switch is smooth and free of external or internal binding. Tighten and loose knobs.	Para 4–9*b*, *c*, *d*, and *e*.
4	RECEIVER switch	Turn RECEIVER switch to ON; observe that CHANNELS lamp lights. Adjust VOLUME, hear signal or static, each assigned channel.	Para 4–8*a*, items 1, 2, and 3. Para 4–9*a*.
5	TRANS. FIL. switch	Turn TRANS. FIL. switch to ON; observe that panel lamp (red jewel) lights.	Para 4–8*a*, items 5. Para 4–9*a*.
6	Handset	Press the push-to-talk switch (key the transmitter) on the handset and observe that the ANTENNA lamp (amber jewel) lights and the panel meter indicates 400 ma ±40, each assigned channel.	Para 4–8*a*, items 6, 7, 9, 10, 11, and 12. Para 4–9*a*.
7	Handset	Key the transmitter and talk into the handset; observe increase in ANTENNA lamp intensity.	Para 4–8*a*, item 13.

4–6. Operator's Weekly Preventive Maintenace Checks and Services

Sequence No.	Item to be inspected	Procedure	References
1	Antenna system	Check antenna, antenna mount, lead-in cable, and feed-through and standoff insulators for looseness, corrosion, or damage. Tighten and clean all connections and fastenings as necessary. Refer damaged parts to higher category maintenance for repair or replacement.	Para 2–12; see note below.

Sequence No.	Item to be inspected	Procedure	References
2	Radio set mounting	Check all accessible mounting hardware; tighten if necessary.	
3	Cable clamps and clips	Check all accessible clamps and clips; tighten if necessary.	
4	Grounding system	See that the ground system connections are secure and free of corrosion. Tighten and/or clean as necessary.	Para 2-13*b*; see note below.
5	Power source	See that power source cables and accessible connections are secure. In the case of an external power unit or battery source, verify that maintenance procedures adequate to insure combat readiness of the radio set are being followed.	

Note. Sandpaper is recommended for cleaning and brightening conductive metal surfaces as terminal lugs, nuts, and washers on terminal studs, ground straps, and plates.

4-7. Cleaning

a. Inspect the exterior of the RT unit and power supply. They should be free of dust, dirt, grease, and fungus.

b. Remove dust and dirt with a clean, soft cloth.

***Warning:* Cleaning compound is flammable and its fumes are toxic. Provide adequate ventilation. DO NOT use near a flame.**

c. Remove grease, fungus and ground-in dirt from the case; use a cloth dampened (not wet) with cleaning compound.

***Caution:* Do not press on the meter face (glass) when cleaning; aside from obvious damage, the case seal may be voided, admitting dust and moisture.**

d. Clean the front panel, meter, and control knobs; use a soft, clean cloth. If dirt is difficult to remove, dampen the cloth with water; mild soap may be used for more effective cleaning. Use soap sparingly; flushing to remove may damage components internally.

4-8. Operator's Troubleshooting Charts for Radio Set AN/SCR-32(*)

The following troubleshooting charts give systematic troubleshooting procedures for the operator of Radio Sets AN/SRC-32, AN/SRC-32X, and AN/SRC-32Y.

a. Operator's Troubleshooting Chart for Radio Set AN/SRC-32.

Item	Trouble symptom	Probable trouble	Checks and corrective measures
1	CHANNELS lamp does not light.	Defective fuse(s) in low voltage portion of power supply or open circuit breakers.	Verify power to input of power supply. If converter MG1 is not operating, replace F3. If MG1 is still inoperative, refer to higher category maintenance. If MG1 is operating, replace F1.
		Defective lamp DS2	Replace lamp. If condition persists, refer to higher category maintenance.
2	CHANNELS lamp lights but no audio (signal, noise, static, etc) is heard (receiver quiet).	SQUELCH control advanced too far. Defective fuse in the low voltage section of the power supply.	Turn SQUELCH control counterclockwise. Replace F2. If symptom persists, refer to higher category maintenance.

Item	Trouble symptom	Probable trouble	Checks and corrective measures
3	Smooth hiss but not signal or static noise is heard.	No crystal in selected channel.	If selected channel is an assigned channel, refer to higher category maintenance.
		Antenna lead-in system open or shorted.	Restore open or clear short or refer to higher category maintenance for repair.
4	No quieting when SQUELCH turned on.	Unwanted ground on circuit of terminal S of TB3.	Refer to higher category maintenance.
5	Transmit filament lamp (red jewel) does not light when TRANS. FIL. switch is at ON.	Defective lamp DS3	Replace lamp.
6	Transmit filament lamp lights but transmitter is inoperative when keyed (panel meter indicates zero).	Defective or open circuit breaker(s).	Turn switch to OFF, wait a few minutes, and then turn switch to ON again. If symptom persists, or circuit breaker reopens, refer to higher category maintenance.
7	Transmit filament lamp lights but transmitter is inoperative when keyed (panel meter indicates zero).	Defective fuse in high voltage section of power supply.	Replace fuse F4 and/or F5. If symptom persists, refer to higher category maintenance.
8	Transmit filament lamp lights but transmitter is inoperative when keyed (panel meter indicates in excess of 500 ma).	Lack of transmitter final amplifier grid drive.	Cease keying immediately; refer to higher category maintenance.
9	When keying transmitter, ANTENNA lamp does not light, but panel meter indicates between 360–440 ma.	Defective lamp DS4	Replace lamp. If symptom persists, refer to higher category maintenance.
10	ANTENNA lamp does not light, meter indicates zero.	Handset cord of switch defective.	Refer to higher category maintenance.
11	ANTENNA lamp does not light, meter indicates between 100 and 360 ma.	Loose or open connections between RT unit and antenna.	Tighten and/or restore connections. If symptom persists. refer to higher category maintenance.
12	ANTENNA lamp does not light, meter indicates between 100 and 360 ma.	Antenna lead-in circuit partially or wholly grounded.	Remove foreign material from insulators. Clear short circuit from lead-in or antenna. If symptom persists, refer to higher category maintenance.
13	Speech input to keyed transmitter causes no increase in ANTENNA lamp intensity.	Defective microphone in handset or defective handset cable. Defective modulator section in RT unit.	Refer to higher category maintenance.

b. Operator's Troubleshooting Chart for Radio Set AN/SRC–32X.

Item	Trouble symptom	Probable trouble	Checks and corrective measures
1	CHANNELS lamp does not light.	Defective fuse(s) in low voltage section of power supply.	Verify power to input of power supply. If converter MG1 is not operating, replace fuses F1, F2, and F3; if MG1 is still inoperative, refer to higher category maintenance.

Item	Trouble symptom	Probable trouble	Checks and corrective measures
		Defective lamp DS2	If MG1 is operating, replace lamp. If symptom persists, refer to higher category maintenance.
2	CHANNELS lamp operates, but no audio (sound, noise, etc) is heard.	SQUELCH control advanced too far. Defective low voltage rectifier.	Turn SQUELCH control counterclockwise. Refer to higher category maintenance.
3	Smooth hiss but no signal or static noise is heard.	No crystal in selected channel	If selected channel is an assigned channel, refer to higher category maintenance.
		Antenna lead-in system open or shorted.	Restore open or clear short or refer to higher category maintenance for repair.
4	No quieting when SQUELCH control is turned on.	Unwanted ground on circuit of terminal S of TB3.	Refer to higher category of maintenance.
5	Transmit filament lamp (red jewel) does not light when TRANS. FIL. switch is at ON.	Defective lamp DS3	Replace lamp
6	Transmit filament lamp lights but transmitter is inoperative when keyed (panel meter indicates zero).	*a.* Defective or open circuit breaker(s).	*a.* Turn switch to OFF, wait a few minutes, and then turn switch ON again. If symptom persists, or circuit breaker reopens, refer to higher category maintenance.
		b. Defective fuse in high voltage section of power supply.	*b.* Replace fuse F4 and/or F5. If symptom persists, refer to higher category maintenance.
7	Transmit filament lamp lights but transmitter is inoperative when keyed (panel meter indicates in excess of 500 ma).	Lack of transmitter final amplifier grid drive.	Cease keying immediately; refer to higher category maintenance.
8	When keying transmitter, ANTENNA lamp does not light, but panel meter indicates between 360 and 440 ma.	Defective lamp DS4	Replace lamp. If symptom persists, refer to higher category maintenance.
9	ANTENNA lamp does not light, meter indicates zero.	Handset cord or switch defective.	Refer to higher category maintenance.
10	ANTENNA lamp does not light, meter indicates between 100 and 360 ma.	Loose or open connections between RT unit and antenna.	Tighten and/or restore connections. If symptom persists, refer to higher category maintenance.
11	ANTENNA lamp does not light, meter indicates between 100 and 360 ma.	Antenna lead-in circuit partially or wholly grounded.	Remove foreign material from insulators. Clear short circuit from lead-in or antenna. If symptom persists, refer to higher category maintenance.

c. Operator's Troubleshooting Chart for Radio Set AN/SRC–32Y.

Item	Trouble symptom	Probable trouble	Checks and corrective measures
1	CHANNELS lamp does not light.	Defective fuse(s) in low voltage portion of power supply.	Verify power to input of power supply. Replace fuses F1, F2, and F3.
		Defective lamp DS2	Replace lamp. If symptom persists, refer to higher category maintenance.
2	CHANNELS lamp lights but no audio (signal, noise, static, etc) is heard (receiver quiet).	SQUELCH control advanced too far.	Turn SQUELCH control counterclockwise.
		Defective fuse in the low voltage section of the power supply.	Replace fuse F2. If symptom persists, refer to higher category maintenance.
3	Smooth hiss but no signal or static noise is heard.	No crystal in selected channel	If selected channel is an assigned channel, refer to higher category maintenance.
		Antenna lead-in system open or shorted.	Restore open or clear short or refer to higher category for repair.
4	No quieting when SQUELCH turned on.	Unwanted ground on circuit of terminal S of TB3.	Refer to higher category maintenance.
5	Transmit filament lamp (red jewel) does not light when TRANS. FIL. switch is at ON.	Defective lamp DS3	Replace lamp.
6	Transmit filament lamp lights but transmitter is inoperative when keyed.	Defective fuse in high voltage portion of power supply.	Replace fuse F4. If symptom persists, refer to higher category maintenance.
7	When keying transmitter ANTENNA lamp does not light, but panel meter indicates between 360–440 ma.	Defective lamp DS4	Replace lamp. If symptom persists, refer to higher category maintenance.
8	ANTENNA lamp does not light, meter indicates zero.	Handset cord or switch defective.	Refer to higher category maintenance.
9	ANTENNA lamp does not light, meter indicates between 100 and 360 ma.	Loose or open connections between RT unit and antenna.	Tighten and/or restore connections. If symptom persists, refer to higher category maintenance.
10	ANTENNA lamp does not light, meter indicates between 100 and 360 ma.	Antenna lead-in circuit partially or wholly grounded.	Remove foreign material from insulators. Clear short circuit from lead-in or antenna. If symptom persists, refer to higher category maintenance.
11	Speech input to keyed transmitter causes no increase in ANTENNA lamp intensity.	Defective microphone in handset or defective handset cable. Defective modulator section in RT unit.	Refer to higher category maintenance.

4–9. Repairs and Adjustments (fig. 3–1)

a. Replacement of Panel Lamps.

(1) Remove cover of jewel by turning it counterclockwise.

(2) Press in on the lamp and turn it counterclockwise to remove.

(3) Pull the defective lamp out and replace it with a new one. Push in and twist clockwise to lock.

(4) Replace and fingertighten jewel.

b. Replacement and/or Calibration of CHANNELS Selector Knob.

(1) Set RECEIVER switch to ON.

(2) If knob is damaged, remove by loosening the two setscrews with a 1/16 Allen wrench and pulling off.

(3) Temporarily tighten setscrews in loose or replacement knob.

(4) With SQUELCH at OFF and LOCAL–REMOTE switch at LOCAL, advance VOLUME control so that sound (noise or signal) can be heard.

(5) Turn the CHANNELS knob counterclockwise to the position where a smooth hiss replaces the signal or static noise.

(6) Turn to the next counterclockwise position. This also will be relatively quiet.

(7) Turn to the next counterclockwise position. This will be channel 10.

Note. If any two adjacent channels are unassigned, (and therefore do not have the receiver crystals installed), refer to higher category maintenance for knob positioning; the sound will be the same as the normal sound which identifies positions 11 and 12 of the CHANNELS switch shaft.

(8) Loosen the knob setscrews, position the arrow to channel 10 and final-tighten the setscrew.

c. Replacement and/or Calibration of VOLUME Knob.

(1) Remove knob by loosening the setscrew with a 1/16 Allen wrench, and pull off.

(2) Turn shaft fully counterclockwise.

(3) Install knob or replacement and position to indicated OFF.

(4) Final-tighten the setscrew.

d. Replacement and/or Calibration of LOCAL–REMOTE Knob.

(1) If knob is damaged, remove it by loosening the setscrew with a 1/16 Allen wrench and pulling off.

(2) Temporarily tighten setscrew in loose or replacement knob.

(3) Position switch in counterclockwise detent.

(4) Loosen the setscrew, position the knob index toward final *L* of LOCAL and final-tighten the setscrew.

e. Replacement and/or Calibration of SQUELCH Knob.

(1) If knob is damaged, remove it by loosening the setscrew with a 1/16 Allen wrench and pulling off.

(2) Temporarily tighten the loose or replacement knob on the shaft.

(3) Turn the knob counterclockwise until switch *clicks* off.

(4) Loosen the setscrew.

(5) Orient the knob so that it will indicate OFF in this position, and A.N.L. as soon as a clockwise rotation of shaft clicks switch *on.*

(6) Final-tighten the setscrew.

CHAPTER 5

ORGANIZATIONAL MAINTENANCE

Section I. GENERAL INSTRUCTIONS

5–1. Scope o Organizational Maintenance

a. This chapter contains instructions covering organizational maintenance procedures for the AN/SRC–32(*) which are performed in addition to the operator's preventive maintenance (paras 4–1 through 4–9).

b. Organizational maintenance consists of the following:

(1) Monthly preventive maintenance (para 5–5).
(2) Quarterly preventive maintenance (para 5–6).
(3) Touchup painting (para 5–7).
(4) Troubleshooting (para 5–8).
(5) Replacement of defective electron tubes (para 5–9).

5–2. Tools, Materials, and Test Equipment Required

The tools, materials, and test equipment required for organizational maintenance are as follows:

a. Tools. Tool Kit, Radar and Radio Repairman TK–87/U.

b. Materials.
(1) Cleaning Compound (FSN 7930–395–9542).
(2) Cleaning cloth (FSN 8305–267–3015).
(3) Soft-bristled brush, 1/2 or 3/4 inch.

c. Test Equipment.
(1) Multimeter TS–352B/U (TM 11–6625–366–15).
(2) Test Set, Electron Tube TV–7D/U (TM 11–6625–274–12).

Section II. ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

5–3. Organizational Preventive Checks and Services

In addition to performing troubleshooting, replacement, and repair functions beyond the scope of the operator, the organizational repairman will perform monthly preventive checks and services. The monthly interval is based upon operation of the radio set 8 hours or less per day. For significantly longer operating days such as 16 hours, the maintenance interval should be reduced to every 2 weeks. The organizational preventive checks should be scheduled concurrently with the operator's weekly checks.

5–4. Preparation for Organizational Preventive Maintenance Checks and Services

a. Disconnect or turn off the power source, and prominently tag it to prevent unauthorized persons from energizing the equipment.

b. Remove power supply cover and RT unit case; use the slack in the speaker cable to maintain the speaker connection (para 2–6).

c. Inspect tubes without removing them, when feasible, during preventive maintenance procedure. Do not remove to check for emission, cracked tube sockets, or weak tension in socket pin grips. Frequent tube removal for inspection shortens tube and socket life unnecessarily.

5–5. Organizational Monthly Preventive Maintenance Checks and Services Chart

Sequence No.	Item to be inspected	Procedure	References
1	Antenna system	Check internal antenna connection cable for tightness and dress. Check feedthrough insulator for cracks and tightness. Tighten or replace as necessary.	Fig. 2–7 and para 2–12*k*.
2	Radio set mounting	Check RT unit mounting hardware for tightness. Inspect power supply mounting and resecure if necessary.	Paras 2–6 and 2–7.
3	Cables and clips	Check terminals and cable hold-down clips at both ends of power cable for tightness. Inspect insulation and conductors for possible damage and proper slack dress. Tighten, repair, or replace as necessary.	Para 2–8.
4	Ground cable	Inspect both ends of RT unit flexible ground cable for tightness and corrosion Clean and tighten as necessary.	Para 2–13*a*.
5	Power source	Inspect source cable connections at power supply. Clean and tighten if necessary.	Para 2–9.
6	Tubes	Inspect tubes in RT unit (and power supply as applicable) without removing them. Check for proper seating in sockets, loose shields and/or retainers, cracked or loose bases, and tightness and dress of connections to top caps of the 10 type 807 tubes. Replace only tubes that have loose bases, loose top caps, or broken glass.	Para 2–15.
7	RT unit and power supply.	Make general visual inspection of components, wires, and connections for signs of looseness, overheating, insulation damage, loose mountings, or damage. Inspect commutators of any rotating machinery for excessive fouling or evidence of excessive arcing. Clean and dress commutator and replace brushes only if indicated.	

Sequence No.	Item to be inspected	Procedure	References
8	RT unit and power supply.	Brush dust from components and interior surfaces of units; be careful not to disturb coil taps and tube cap connections. ***Caution*: Avoid brushing dust into adjustable capacitors and relay contacts; the cleaning may do more harm than good.**	
9	RT unit	Verify that meter plug P1 is in FINAL PLATE test jack J3.	Fig. 2–10.
10	RT unit and power supply.	Replace cases and restore source power. Remove placard.	

5–6. Organizational Quarterly Preventive Maintenance Checks and Services Chart

Sequence No.	Item to be inspected	Procedure	References
1	Completeness	Check to see that the equipment is complete.	App. B.
2	Installation	Check to see that the equipment is properly installed.	Paras 2–3 through 2–16.
3	Cleanliness	Check to see that the equipment is clean.	Para 4–7.
4	Preservation	Check all surfaces for evidence of rust, fungus, or corrosion. Spot-paint bare spots.	Para 4–7 and 5–7. TM 9–213, TB SIG 364, and TB SIG 355–3.
5	Publications	Check to see that all publications are complete, serviceable, and current.	DA Pam 310–4.
6	Modifications	Check DA Pam 310–7 to determine whether new applicable MWO's have been published. All URGENT MWO's must be applied immediately. All NORMAL MWO's must be scheduled.	DA Pam 310–7 and TM 38–750
7	Cord assemblies	Check the cord assemblies for damage to the insulation.	Fig. 7–1.
8	Spare parts	Check all spare parts (organizational) for general condition and proper storage. There should be no evidence of overstock, and all shortages must be on valid requisitions.	App. B.

5–7. Touchup Painting

When the finish on the metal parts of the equipment has been badly scarred or damaged, lightly sand them with fine sandpaper. Use No. 000 sandpaper (FSN 5350–271–7939) and cleaning compound to clean the surface down to the bare metal. Brush two thin coats of paint on the bare metal. Refer to applicable cleaning and refinishing practices specified in TM 9–213 and TB SIG 364.

5–8. Organizational Troubleshooting Procedure

a. The organizational troubleshooting procedure for the radio set is an extension of the operator's troubleshooting procedure (para 4–8). In addition to visible and audible indications, the organizational repairman will use a multimeter and an electron tube tester, as appropriate. He will also use the two RT unit schematic diagrams (figs. 11–4 and 11–

5), the power supply schematic diagram applicable to the particular model (figs. 11–6, 11–7, or 11–8), illustrations showing component locations, and the control circuit diagram to aid in sectionalizing and localizing faults.

b. Sectionalization means tracing the fault to a unit (such as a power supply or an RT unit) or to a section or portion (such as a receiver, transmitter, or low voltage supply) of the unit.

c. Localization means tracing the fault to a particular area. The areas of some faults, such as burned-out resistors and tubes, overheated transformers and motor generators, and arcing in transmitter RF circuits are indicated by sight, smell, touch, or hearing. The exact cause will usually have to be isolated by instrument measurement such as voltage, resistance, and continuity.

5–9. Tube Testing Techniques

When trouble occurs, check all cabling, connections, and the general condition of the equipment before attempting removal of electron tubes. Try to isolate the trouble to a particular unit or section of the equipment. Do not discard tubes merely because the tubes have been used for a specified length of time. Satisfactory operation in a circuit is the final proof of tube quality. The tube in use may work better than a new one.

a. Use of Tube Tester. Remove and test one tube at a time. Discard a tube only if its defect is obvious or if the tube tester shows it to be defective. Do not discard a tube that tests at or just above its minimum test limit on the tube tester. Replace the original tube, or insert a new one if required, bfore testing the next one.

b. Tube Substitution Method. If a tube tester is not available, troubleshoot by the tube substitution method.

(1) Replace the suspected tubes, one at a time, with new tubes. Identify with component designation and lay aside each tube as removed (fig. 2–8). If the equipment becomes operative, discard the last tube removed.

Note. The oscillator circuit may function with one tube and not another, even though both tubes are new. Retain any removed tube until its condition is checked by a tube tester.

(2) Reinsert the remaining original tubes, one at a time, in the original sockets. If equipment failure occurs during this step, discard the last original tube. Do not leave a new tube in a socket if the equipment operates satisfactorily with the original tube.

(3) It is possible to use a tube of the same type temporarily in another socket when a replacement is not available to localize a fault.

(4) If tube substitution does not correct the trouble, reinsert the original tubes in the original sockets before forwarding the defective equipment for higher category repair.

Caution: **Extremely dangerous dc, ac, and RF voltages exist in the RT unit and power supply. Use caution when making tests and voltage measurements with equipment turned on, especially when keying the transmitter.**

5–10. Organizational Troubleshooting Chart for Radio Set AN/SRC–32(*)

Item No.	Symptom	Probable trouble	Corrective measures
1	Replacement fuses and/or circuit breakers *open up.*	Short circuit or overload in low voltage power supply.	Remove rectifier. If symptom persists, send power supply to higher category maintenance, trouble in power transformer or converter is indicated. Install replacement rectifier. If symptom persists, turn off power and disconnect power

Item No.	Symptom	Probable trouble	Corrective measures
			cable lead to terminal 4 of TB1 (either end). With ohmmeter, check for solid or partial short from terminal 4 of TB1 to ground to sectionalize trouble to either power supply or RT unit. Send defective unit to higher category maintenance.
2	No sound from receiver, or below-normal static level.	Defective tube in receiver section.	Check tubes by substitution or tube tester. If symptom persists, send RT unit to higher category maintenance.
3	Smooth hiss only from assigned channel of receiver.	Defective crystal or oscillator tube V2.	Substitute crystal (with any other) and/or V2; replace either one found defective or, if trouble persists, sent RT unit to higher category maintenance.
4	Turning SQUELCH on does not quiet receiver.	Unwanted ground on circuit of terminal S of TB3.	With power off, trace source of ground; clear ground as indicated by results of continuity check.
5	Extremely weak or no signal; lower level noise like static.	Poor or no contact at contacts 1 and 2 of antenna relay K1.	Clean and adjust to make positive contact.
6 (24 vdc only)	Circuit breaker(s) open	Defective circuit breaker(s) or electrical or mechanical overload in MG2 and/or MG3.	Check wiring to and from MG1 and MG2 for shorts or arcing. If none, send PP–4598/SRC–32 to higher category maintenance.
7	Transmitter inoperative when keyed (panel meter indicates zero or over 500 ma).	Defective tube in transmitter/modulator sections of RT unit.	If some tubes are *cold*, check heater continuity of those to locate open; replace. If all are *hot*, sectionalize fault, using panel meter (P1) and J1, J2, and J3, and the information in paragraph 2–18*d*, *e*, and *f*. Return P1 to J3. Check tubes in fault section by substitution or tube tester. Replace defective tube(s). If symptom persists, proceed to item 8 or 9.
8	ANTENNA lamp and transmitter inoperative.	Defective element in transmitter control circuit, such as no control voltage from low-voltage B + broken cable wire, dirty contacts on relay or switch.	Check voltage or continuity, as appropriate, of elements in control circuit, using figure 5–1 and the applicable power supply schematic diagram, including P–T–T switch and relay contacts. If fault is not found or is beyond repair scope at this level, sent RT unit to higher category maintenance.

Item No.	Symptom	Probable trouble	Corrective measures
9	Speech input does not modulate transmitter properly.	Defective modulator tubes. Defective handset cable. Defective microphone in handset.	Check V8 through V13; replace as required. Check continuity of microphone circuit through handset. Replace handset if open or resistance remains constant when shaken or jarred. If symptom persists, send RT unit to higher category maintenance.

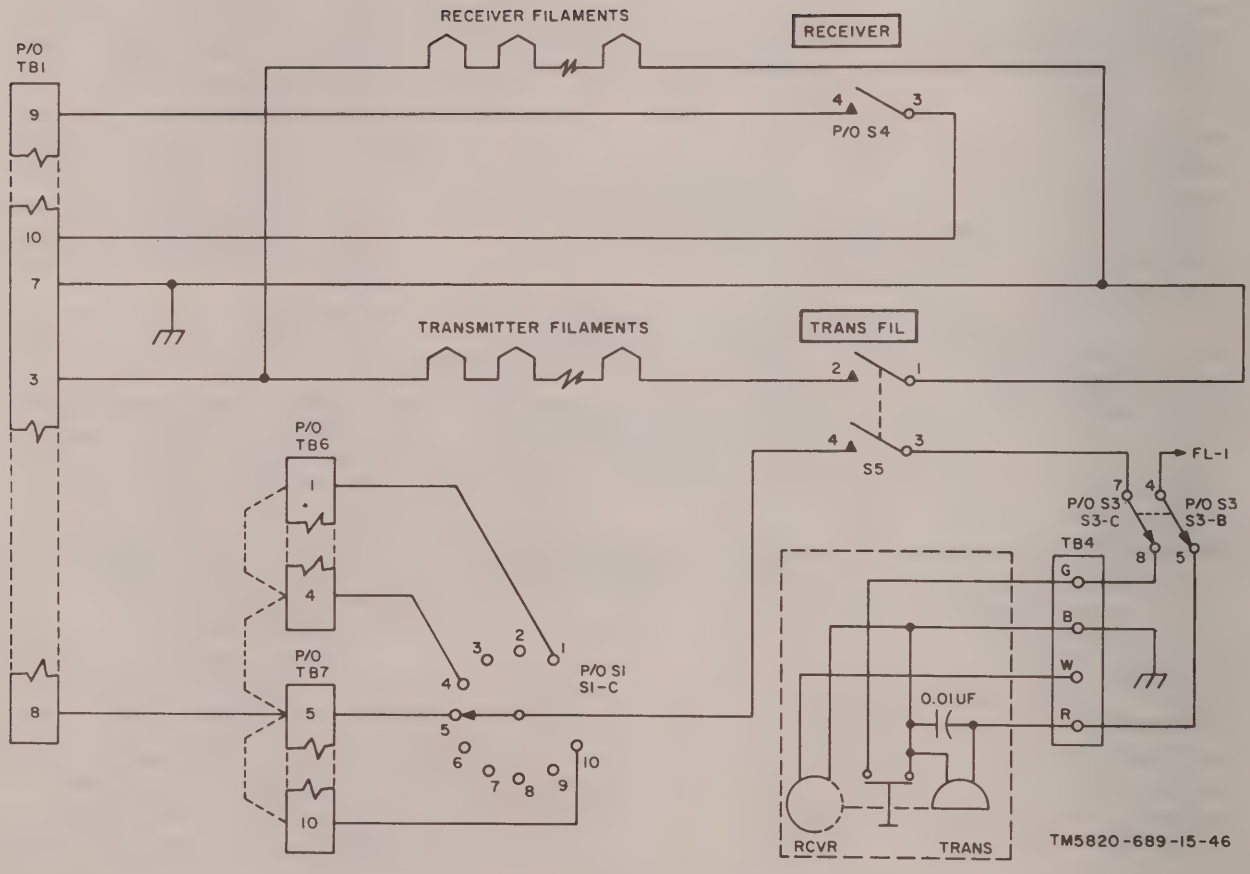


Figure 5-1. RT unit control circuit including handset.

CHAPTER 6

FUNCTIONING OF EQUIPMENT

Section I. BLOCK DIAGRAM ANALYSIS

6-1. General

This chapter contains block diagram analysis of the functioning of Radio Set AN/SRC-32(*) and detailed circuit functioning. The radio set transmits and receives amplitude-modulated, crystal-controlled signals from a single antenna. The separate power supply furnishes filament, low dc, bias, and high dc voltages. The handset transmitter voice-modulates the carrier. The handset receiver and the cabinet speaker reproduce received signal modulation.

6-2. Block Diagram Analysis of Radio Set AN/SRC-32(*)
(fig. 6-1)

The signal paths shown in the block diagram (fig. 6-1) are discussed in this paragraph. For detailed circuit functioning, refer to paragraphs 6-3 through 6-9.

a. Antenna Circuits. Transmitter signals are directed through antenna switching relay K1 to antenna tuning coil L10. Relay K1 also connects antenna loading capacitors C90 through C99 in the transmit mode. Received signals from the antenna through L10 are switched by K1 to receiver antenna transformer T1.

b. Transmitter Circuits. Crystal-controlled oscillator V14 generates cw signals in the 2- to 5-megacycle (mc) range. The signal frequencies are controlled by selection of plug-in crystals. Any one frequency selected by channel switch S1 is amplified by buffer tube V15. The cw output from V15 is applied to the signal grids of the final amplifier. The cw signal is power-amplified and modulated in the final amplifier. The modulated cw final output is applied to coil L10 through relay K1.

c. Modulator Circuits. Voice signals developed in the transmitter of Handset H-272/SRC-32 are applied to paralleled modulator driver tubes V8 and V9 through bandpass filter FL1. Amplified voice signals from V8 and V9 drive modulator output tubes V10 through V13. The output of V10 through V13 is applied to both plate and screen of transmitter final amplifier tubes V16 through V20.

d. Receiver Circuits. Signals in receiver antenna transformer T1 are tuned by selectable capacitors C9 through C18 and amplified in RF tube V1. RF tuner T2 and one of selectable capacitors C19 through C28 transfer the signal to oscillator mixer tube V2, where it is mixed with crystal oscillator frequency (Y1 through Y10), producing a 455-kilocycle, intermediate-frequency (IF) signal at the output of V2. The 455-kc IF signal is amplified in V3 and V4. The audio (speech component) is recovered in the demodulator circuit containing CR1 and amplified by V6A. Tube V7 further amplifies the audio and provides power to drive loudspeaker LS1 and the handset receiver.

e. Power Supply. Operating and control voltages for the radio set are developed in the power supply; 32 volts root mean square (rms) ac (vac) for tube heaters (FIL), +300 volts dc (low voltage (lv) dc), and +600 volts dc (high voltage (hv) dc) are furnished. Control voltages are derived from the low-voltage dc supply. Negative dc bias voltage (BIAS) for the modulator is developed by voltage drop due to current flow in the low voltage dc return to ground.

Section II. DETAILED CIRCUIT FUNCTIONING

6–3. Signal Paths in Modulator Portion (figs. 11–4 and 11–5)

Speech signal energy from the handset microphone enters the RT unit at TB4–R. Switch contact S3–B5 routes it to transformer-filter FL1, which has a passband of 200 to 3,000 cycles. The FL1 output is applied to driver stage V8 and V9 in parallel and push-pull driver transformer T7 which, in turn, drives pentode-connected, push-pull-parallel modulator tubes V10 through V13 with their plate load, modulator transformer T8. Negative peaks of the high-amplitude modulation signal superimposed on the hv dc at the secondary of T8 are fed back through R60 to the screen grids of V8–V9, reducing the gain of the speech amplifier stage. All other combinations of high voltage dc with superimposed audio are sufficiently positive to maintain ignition of VR3, prohibiting any feedback.

6–4. Signal Paths in Transmitter Portion (fig. 11–4)

The cw carrier frequency signal originates in the transmitter oscillator stage containing V14 and crystals Y11 through Y20, selectable by section F of CHANNEL selector switch S1. The cw signal energizes buffer (final driver amplifier) V15 through C69. The output from V15 is coupled to the transmitter final stage grids through V15 plate load-coupling network L3, L4, L5, C72, C75, C112, R70, and L6. The final stage has five tubes in parallel, V16 through V20. The grids are driven through 100-ohm parasitic suppressor resistors R72, R74, R76, R78, and R80. The plate circuits have parasitic suppressor, 39-ohm resistors R82, R83, R84, R86, and R87. High voltage dc is applied to both plate and screen elements of the transmitter final tubes through the secondary of modulator transformer T8, which fluctuates in response to speech modulation. Thus, speech-modulated, radiofrequency (RF) power is developed across plate load choke L7. Optimum RF is coupled to the antenna circuit through a pi-section network containing L7 and tank coil L8 and capacitors C88, C89, and C100 through C110. Antenna coupling is through a second pi-section consisting of L9, C111, C90 through C99, and L10 to antenna terminal E1. Connection to L10 is through one section of antenna relay K1. The tuning of each channel selected by switch S1 is optimized. For the L7–L8 section, C101 through C110 are adjusted and the taps on L8 are adjusted. For L9–L10, C90 through C99 are selectively connected and the taps on L10 are adjusted. The signal path is completed through the inductance represented by the lead-in cable, the antenna mast and the antenna loading coil, and the accumulated distributed capacitance plus the capacitance to space, which constitute the final inductance-capacitance (lc) section for the system.

6–5. Signal Paths in Receiver Portion (fig. 11–5)

a. RF signals enter the receiver through the antenna section of K1. Normal amplitude signals enter antenna transformer T1, and do not affect R1, but excessive RF amplitude will burn out R1, thus protecting T1. Excessive T1 secondary RF signal amplitudes cause neon lamp DS1 to ignite, thus protecting RF amplifier V1 and blocking the receiver. DS1 extinguishes and the receiver resumes operation after the RF signal returns to normal amplitude.

b. Transformer T1 is tuned by capacitors C9 through C18 for selected channels. Signals are amplified in the rf stage consisting of V1 and its plate load, T2, tuned by C19 through C28. The plate is shunt-coupled to its load, by L1 and C5. The amplified and selected signal is injected into the signal grid (G2) of amplifier-oscillator-converter tube V2 at pin 7. The oscillator section of V2, consisting of G1, K, and anode 1, is connected in a plate-tuned, grid-coupled, crystal-controlled configuration.

c. Crystals Y1 through Y10 establish the oscillator channel frequencies at 455 kilocycles (kc) higher than the corresponding received frequencies. Operating bias for the oscillator section of V2 is developed by the flow of

grid current through R5. The received signal and the oscillator signal mix in V2 and appear at the plate as an amplified composite signal. All the components except 455 kc are bypassed to ground by tuned interstage IF transformer T3 which, with C31, couples the 455-kc signal to first IF amplifier stage V3, T4, C35, and R12 and R14. Capacitor C35 injects the signal into second IF amplifier tube V4 which, in turn, drives output IF transformer T5.

d. The speech modulation of the 455-kc signal is recovered in the detector circuit consisting of T5 secondary, CR1, R19, and R20. The RF component is bypassed to ground by C37 and C43. One-half the audio, at the junction of R19 and R20, is applied to volume control R29 through V5B and C44. From the arm of R29, it is applied through C46 to the grid of audio amplifier V6A. Amplified audio at the plate of V6A is resistance-capacitance-coupled by R36 and C48 to beam power output amplifier stage V7–T6. Audio power from the nominal 4-ohm secondary of T6 is distributed to TB4 and TB5 through LOCAL–REMOTE switch S3. Speaker LS1 is energized from TB5, and the handset receiver from TB4–W and TB4–B.

6–6. Functioning of Automatic Volume Control Circuit

A small amount of IF energy is coupled by C40 from the plate of V4 to the rectifier-filter combination of V5A, R18, and C6. Fixed bias developed by R22 and R25 provides for delayed automatic volume control (avc) action. Negative dc proportional to the IF signal amplitude is developed across C6 and biases V4, V3, V2, and V1 by way of the avc bus. One-half the avc potential is applied to the signal grid of V4 (junction of R14 and R12). Full avc voltage is applied to the rest of the tubes. Capacitor C35 provides dc isolation between T4 and the V4 grid, and R14 isolates it from the avc bus. Resistor R7 and capacitor C31 provide the same functions for V3. The combinations R4–C4 and R2–C1 provide decoupling and conventional coil-base feed of avc voltage to the signal grids of V2 and V1, respectively. Resistor R13 and capacitor C114 contribute additional avc bus decoupling.

6–7. Functioning of Squelch Circuit

a. Negative dc is developed across C37 and C42 and across C41 and C43 from the demodulation of IF signals by CR1. With the squelch control (R23) off, noise (static) alone, in the absence of signal, develops more than enough negative dc at the control grid, pin 2 of V6B through R26, to keep V6B cut off by overcoming the nominal cathode bias. Tube V6B is the triode-connected pentode section of V6. The cathode, pin 7, is biased to ±2.5 volts at the first junction of voltage divider R28, R34, R32, and R35 from ground to +300 (low voltage dc). The R34–R32 junction establishes a supply level of +36.5 volts for the pin 6 plate of V6B. The pin 6 plate is the dc reference, through R31, for the control grid of the triode section of V6A (pin 9). The cathode level of V6A (pin 8), +40 volts at the R32–R35 junction, establishes normal bias for the V6A audio amplifier stage. Any increase in IF and/or audiofrequency (AF) signal levels develops greater negative dc at pin 2 of V6B; but, since V6B is already cut off, there is no effect.

b. Turning the SQUELCH control clockwise injects positive dc (available from some positive setting of the upper threshold control R21) through R20 and R19 to overcome the noise-developed negative dc reaching the V6B control grid through R26. As soon as the grid voltage approaches the +2.5-volt cathode level, the V6B plate is clamped to the cathode along with the control grid of V6A. This produces complete blocking (cutoff) of V6A, since its cathode is held at a nominal +40 volts by the voltage divider. The passage of any AF signal is thus prohibited.

c. Greater negative dc at the grid of V6B, resulting from received signal of a certain strength, counteracts the squelch-controlled positive voltage. Tube V6B is again cut off (brought out of clamp), allowing V6A to revent to normal bias condition and amplify any audio signal present. Thus, the extent of positive (clockwise) adjustment of the SQUELCH control determines how strong the signal must be to unlock the audio amplifier, up to the

limit set by the adjustment of upper threshold control R21.

6–8. Functioning of ANL Circuit

a. When switch S2 is closed (SQUELCH control at OFF), the ANL circuit is disabled, passing af signals direct to C44 and R29. Turning the SQUELCH control just beyond OFF opens S2. Whenever S2 is open, the ANL circuit functions (*b* below).

b. The plate (pin 2) of diode V5B is biased positive with respect to its cathode (pin 5) by the direction of the voltage drop across R19 due to the flow of current from demodulator CR1. This enables V5B to pass normal level noise and audio signals as if it were a closed switch. Negative peaks of a burst of excessive noise (such as static from lightning, for instance) will be blocked by reverse-biasing V5B. Positive noise peaks will be blocked by reverse-biasing CR1.

6–9. Functioning of Power Supplies

The functioning of the 24-volt dc (PP–4598/SRC–32) (fig. 11–6) and the 110–volt dc (PP–4599/SRC–32X) (fig. 11–7) power supplies is similar. The main differences appear in the applied input voltage and in the input circuits. These power supplies are described in *a* below. Power Supply PP–4600/SRC–32Y (115 vac) functioning is described in *b* below.

a. Dynamotor-Power Supplies PP–4598/SRC–32 and PP–4599/SRC–32X. These power supplies contain three motor-driven generator (MG) sets which convert the dc input power into the desired outputs.

(1) MG1 supplies an output of 115 volts ac which is applied to the primaries of transformers T1 and T2. The input power is controlled by relay K1, which is activated by the closing of receiver ON–OFF switch S4.

(*a*) The T1 secondary supplies 32 volts ac for the transmitter and receiver filament circuits.

(*b*) The T2 secondary supplies the input for dc low voltage (+300 volts dc) rectifier V1. The rectifier output supplies the dc control voltage, plate voltage for the transmitter modulator and driver, and receiver plate circuits, and modulator bias voltage.

(2) MG2 and MG3 are controlled by relays K2 and K3 which are activated by the handset push-to-talk switch. MG2 supplies high voltage B+ (600 volts dc) for the modulator plate circuits. MG3 supplies high voltage B+ (600 volts dc) for the buffer and final amplifier plate circuits.

b. Power Supply PP–4600/SRC–32Y (fig. 11–8). This power supply operates from a 115–volt ac source. The ac input power is applied to the primaries of low voltage rectifier transformer T1 and high voltage rectifier transformer T2.

(1) *Low voltage rectifier analysis.* Transformer T1 secondaries supply 32 volts ac for the RT–826/SRC–32 filaments, and center-tapped 600 volts ac to the plug-in, solid-state rectifier assembly. The plug-in rectifier assembly uses only the high voltage secondary winding of T1. The rectified and filtered low voltage output is used to supply modulator grid bias and plate voltage for the receiver and modulator drive tubes.

(2) *High voltage rectifier analysis.* Transformer T2 secondary voltage is applied to diode bridge rectifier circuit CR1 through CR12. One side of the bridge consists of diodes CR1, CR2, and CR3, and CR10, CR11, and CR12. The opposite side of the bridge consists of diodes CR7, CR8, and CR9, and CR4, CR5, and CR6. Resistors R7 through R18 insure nearly equal voltages across all diodes. After filtering, the output is connected through the contacts of relay K1 to the high voltage dc output (TB2–6). Relay K1 is activated by the closing of the handset push-to-talk switch.

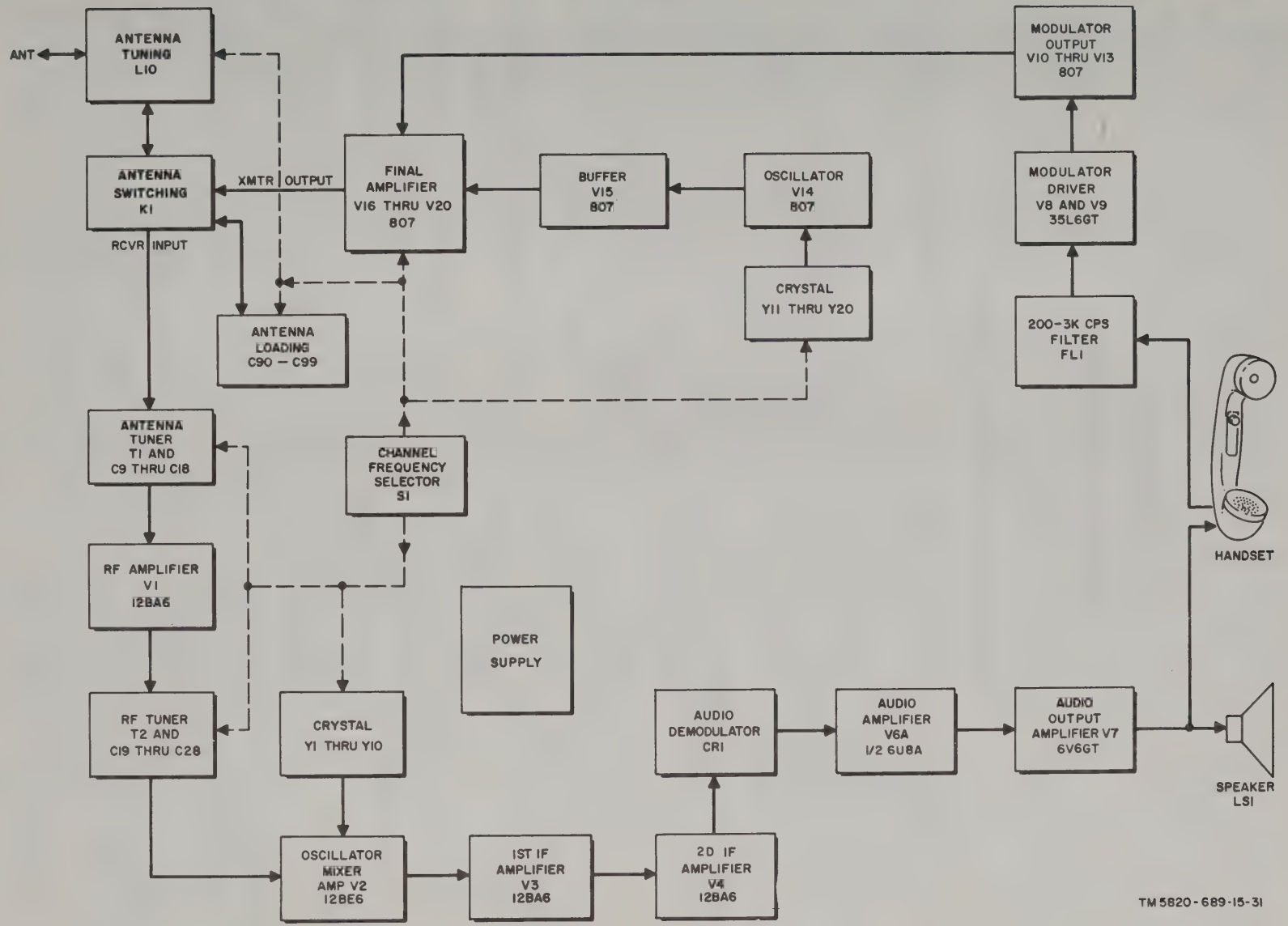


Figure 6–1. RT unit functional block diagram.

CHAPTER 7

AUXILIARY EQUIPMENT

Section I. DESCRIPTION AND DATA

7-1. Purpose and Use of Auxiliary Equipment (fig. 7-1)

While each model of Radio Set AN/SRC-32(*) has local control operating capability, remote control capability is available. Control, Remote Switching C-7270/SRC-32 (fig. 7-1) enables the operator to select channels and to transmit and receive messages at a location remote from an unattended radio set. Nominal separation distance is 35 feet, although operation at greater distances is possible. A practical maximum is 100 feet, limited principally by cable conductor wire size.

7-2. Technical Characteristics of Auxiliary Equipment

RC unit channel selection. Same as the radio set.
RC unit indicator lamps ---Two.
Radio set status indicated:
TRANS lamp on ------Transmitter on.
RECEIVE lamp on ----Receiver on.
Transmit-receive control ---Handset switch.
Transmit ----------Press.
Receive----------Release.
Handset:
Transmitter ----------Carbon microphone, low impedance.
Receiver ----------Earphone, low impedance.
Switch ----------SPST, N.O. momentary.
Active circuits --------Three, independent.
Return circuit --------One, common to three active.
Receiver gate (squelch) ----Panel toggle switch.
Received audio volume -----Panel control, 4-ohm T-pad.
Received audio select ------Panel toggle switch.
Handset ----------Selects handset receiver.
Speaker ----------Selects panel speaker.
Remote drive assembly:
Channel selector drive. 32-volt dc Ledex motor.
Drive motor control ---Low voltage B+ relay
Cables furnished ----------Two.
Channel selector:
Number of conductors. 12.
Length ----------35 feet.
Termination:
Remote end ---. ---Terminal lugs.
Radio set end -----12-pin connector (plug).
Remaining circuits:
Number of conductors. 7.
Length ----------35 feet.
Termination, both ends. Terminal lugs.
Optional facilities provided:
Remote extension speaker circuit:
Separate from RC unit. Any 3 to 6-ohm impedance speaker.
Distance from RC unit. Limited only by wire size.
Cable as required. 2-conductor unshielded, #18 or larger AWG.
Volume ----------As set by RC unit volume control.
On-off control ---. None furnished.
Source connections. Two terminals in RC unit.

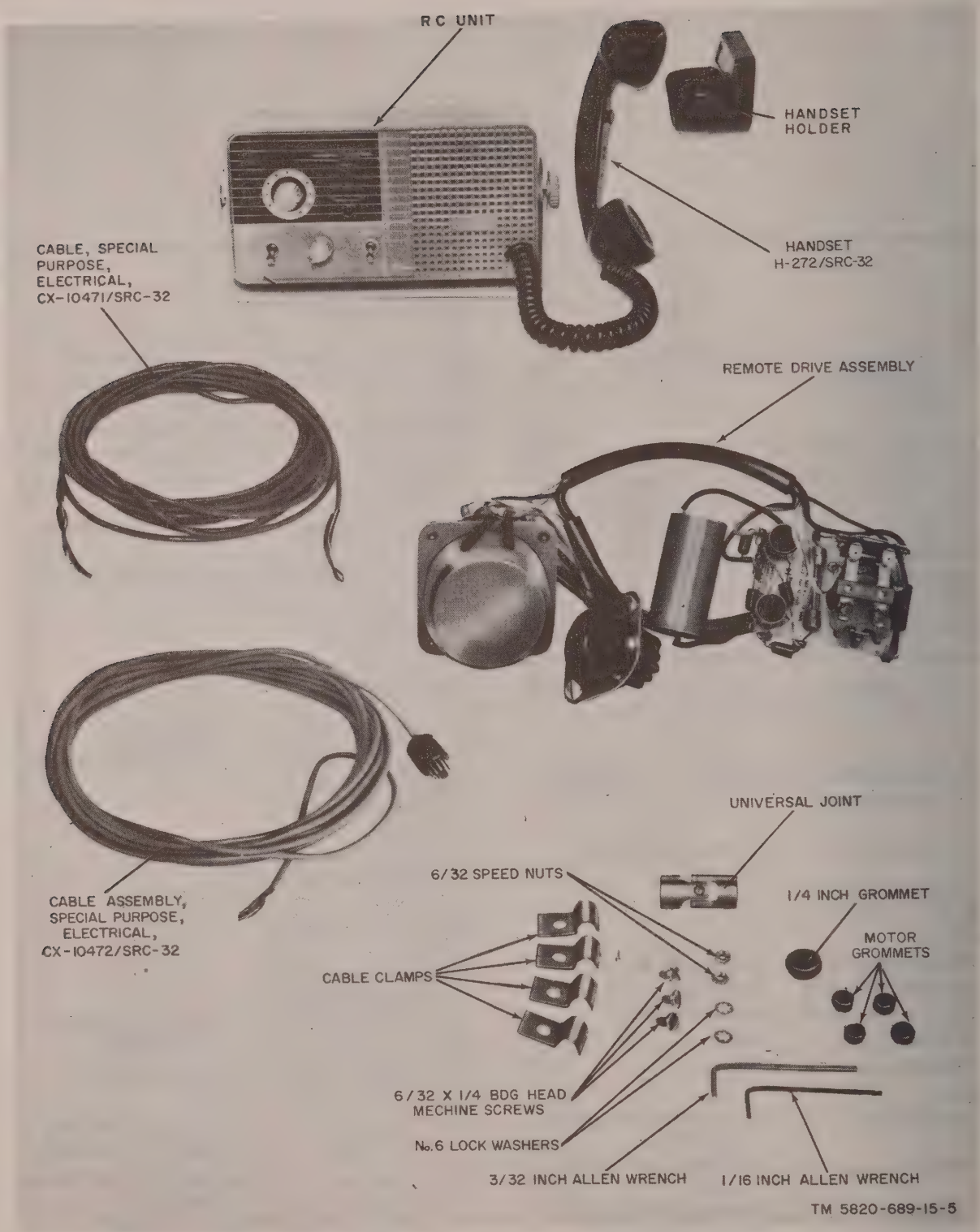


Figure 7-1. Control, Remote Switching C-7270/SRC-32.

7–3. Components of Control, Remote Switching C–7270/SRC–32 (fig. 7–1)

Qty	Item	Dimensions (in.) Height	Depth	Width	Unit weight (lb)
1	Console, remote control (P/O C–7270/SRC–32).	6	5	12	6–3/4
1	Handset H–272/SRC–32	3–1/4	4	9	1
1	Cable assembly, Electrical CX–10471/SRC–32 (35 ft).	----	----	----	1–1/4
1	Cable Assembly, Special Purpose, Electrical CX–10472/SRC–32 (35 ft).	----	----	----	1–1/3
1 set	Running spares:				
5	Fuses, 2 amp MDL				
1	Lamp, Neon NE–51				

7–4. Common Names, RC Unit

A list of the nomenclature assignments for the components of Control, Remote Switching C–7270/SRC–32 is given below. A common name is indicated after each item.

Nomenclature	Common name
Control, Remote Switching C–7270/SRC–32.	RC unit.
Console, remote control (P/O C–7270/SRC–32).	Console.
Cable Assembly, Special Purpose, Electrical CX–10471/SRC–32.	Remote signal cable.
Cable Assembly, Special Purpose, Electrical CX–10472/SRC–32.	Remote drive cable.
Handset H–272/SRC–32	Handset.

7–5. Description of Control, Remote Switching C–7270/SRC–32 (RC Unit)

a. Physical Description.

(1) In addition to the components shown in figure 7–1, a decal transfer is provided with the mounting hardware for the RC unit. For installation and purpose of the decal, see paragraphs 7–11*a* and 7–13.

(2) The console is a bracket-mounted unit with controls, indicators, and a handset for remote operation of the radio set. The case is removable for access to chassis-mounted components and terminal boards. The chassis supports the front panel. Refer to figures 7–2, 7–3, and 7–4, for component and terminal board locations.

(3) The handset is identical with that of the RT unit, and is shipped connected to the RC unit.

(4) The remote drive assembly is installed in the RT unit to position the CHANNELS selector switch upon command from the RC unit. The wired assembly consists of a Ledex motor, a control relay and component board, and a 12-pin connector. Subsequent paragraphs describe the remote drive assembly in more detail.

(5) The two cables which connect the units are 35 feet long. One carries the Ledex drive circuits, the other carries signal and transmit command circuits. Refer to section III for detailed description.

b. Functional Description. The operator selects transmit-receive channels by positioning the RC unit panel control switch. Panel lights on the RC unit indicate TRANSMIT or RECEIVE in response to the position of the press-to-talk switch on the handset. Other RC unit panel controls switch the receiver gate (squelch) circuit off, switch received audio to either remote speaker(s) or handset, and control the volume of received audio. Remote control of squelch and volume functions depends upon presetting at the RT unit. Refer to paragraph 7–14 for initial adjustments.

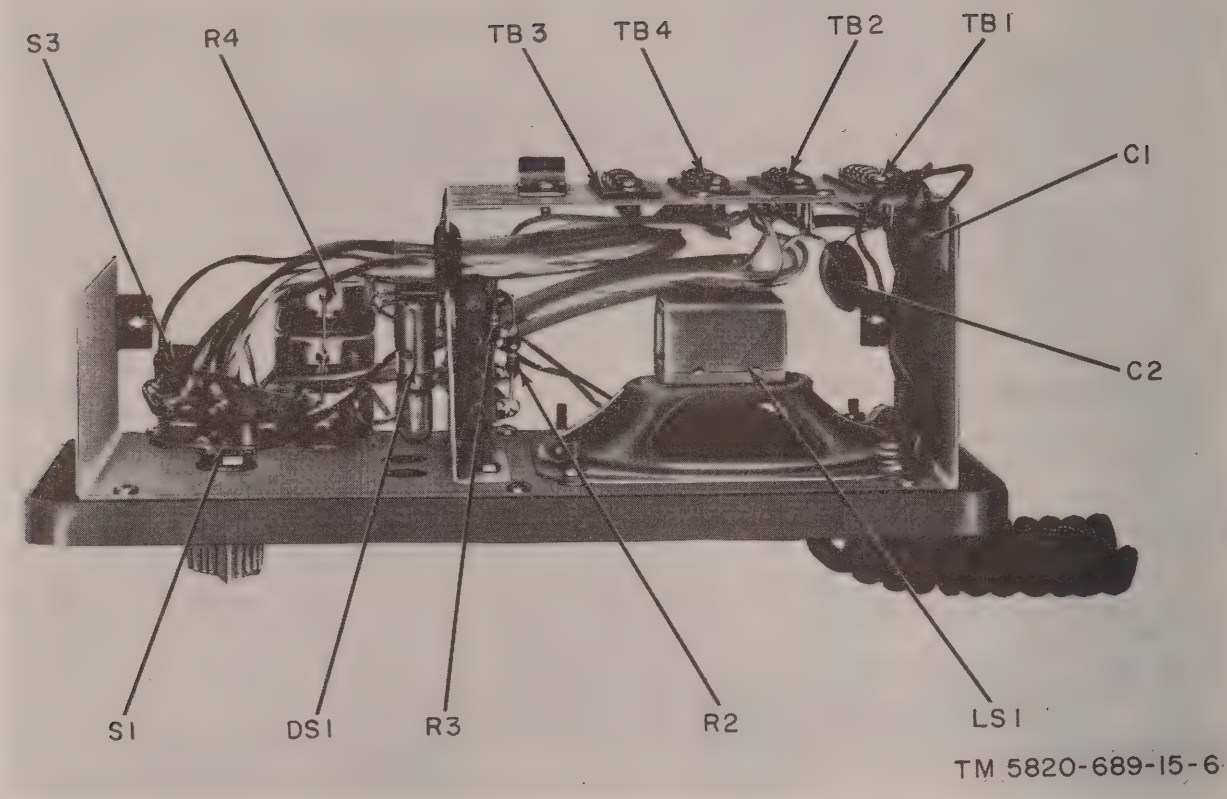


Figure 7–2. RC unit, top view, chassis.

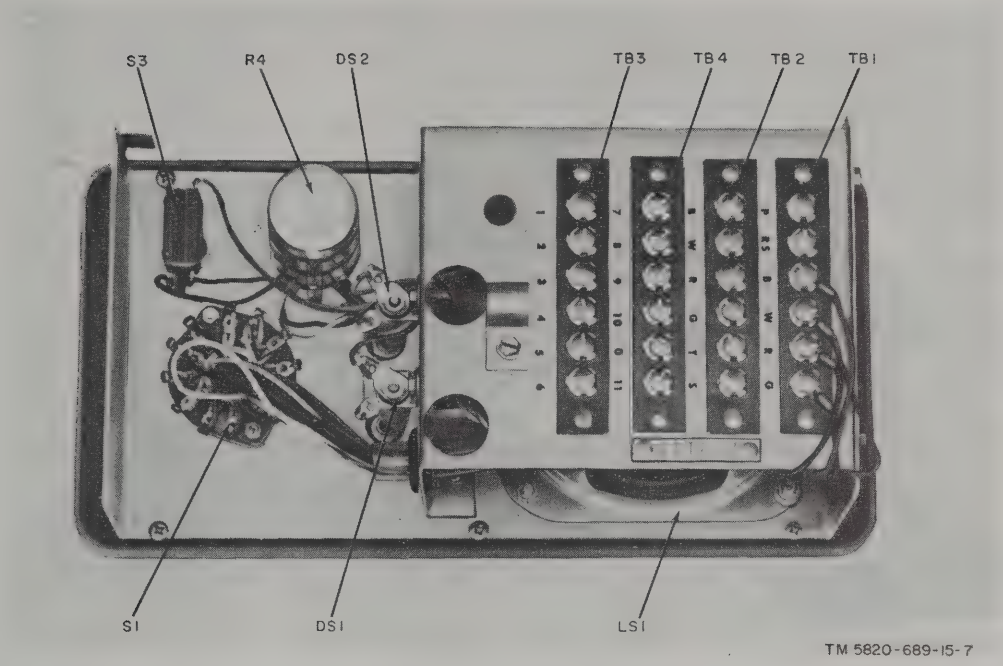


Figure 7–3. RC unit, rear view, chassis.

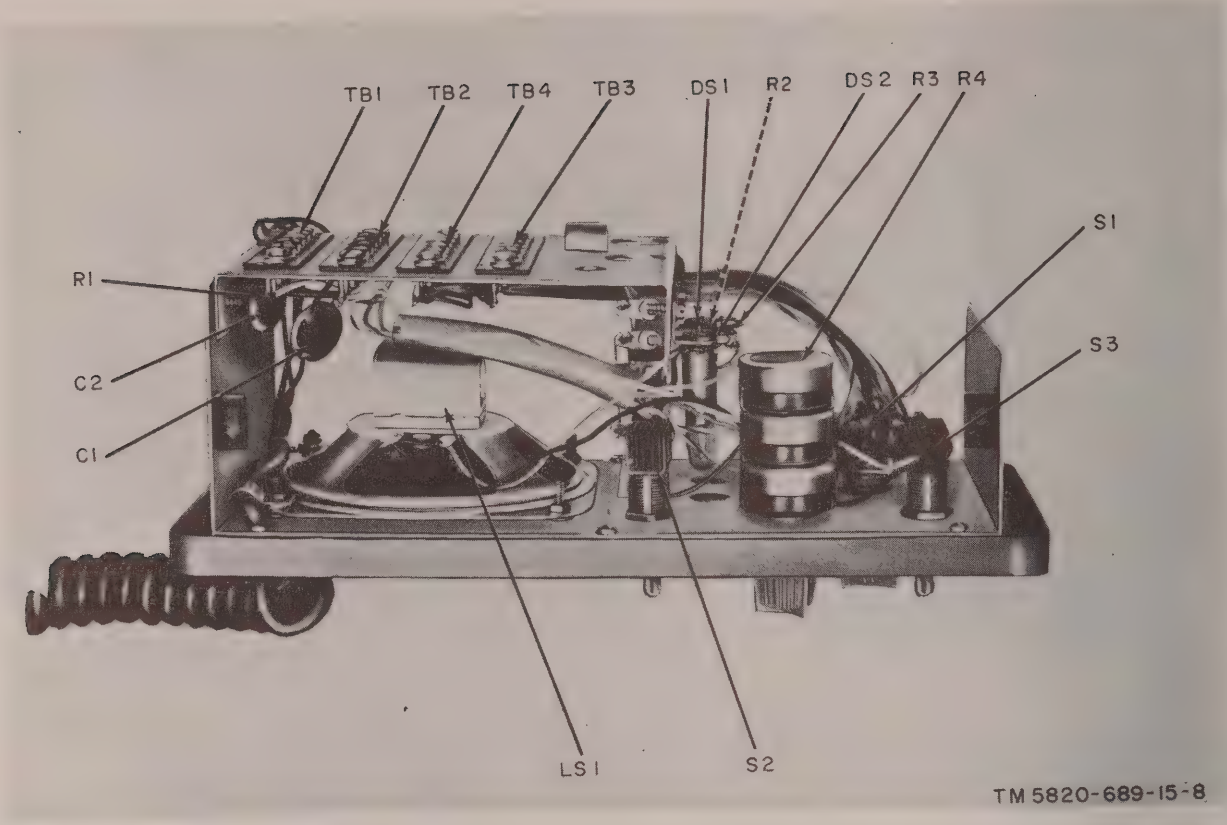


Figure 7–4. RC unit, bottom view, chassis.

Section II. SERVICE UPON RECEPT OF EQUIPMENT, RC UNIT

7–6. Unpacking Remote Unit

a. Packaging Data. When packed for export shipment, the components of Control, Remote Switching C–2720/SRC–32 (RC unit) are packed in cartons which are packaged in one wooden box. Refer to figure 2–1 for packaging details.

b. Packaging Chart for RC Unit.

Contents	Length	Dimensions (In.) Width	Depth	Volume (cu ft)	Unit weight (lb)
RC unit and bracket, handset, remote drive assembly, interconnection cables, installation and miscellaneous hardware, and running spares.	22–3/8	15–3/8	9–1/2	2	36

Warning: **Use caution when working with metal straps and carton staples. Serious cuts and infection may result from contact with edges of straps or with staple points in un-**

packing and subsequent handing of cartons. See qualified medical personnel immediately in case of an accidental cut.

c. Unpacking Wooden Box.

(1) Cut and fold back metal straps. Use a nailpuller to remove nails from top of the wooden packing case and remove top. Do not attempt to pry off the top.

(2) Open the moisture-vaporproof barrier that covers the outer corrugated carton inside the case.

(3) Open the outer fiberboard carton and remove the three individual cartons.

d. Unpacking RC Unit, Miscellaneous Hardware, and Running Spares.

(1) Open the individual cartons and remove the contents.

(2) Replace all cushioning and wrapping material into the empty cartons.

(3) Consign to storage for repackaging, or dispose of used shipping materials as directed by the commanding officer.

7–7. Checking Unpacked Equipment

a. Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report the damage on DD Form 6 (para 1–3).

b. See that the equipment is complete as listed on the packing slip. If a packing slip is not available, check the equipment against the basic issue items list (app. B). Locate the bag of installation and miscellaneous hardware. Inventory and separate the hardware items identified in figure 7–1. Locate and separate the decal transfer (arrow decal). These items are required for installation of the remote unit. The remainder of the hardware may be used as appropriate to a given installation. *For example,* self-tapping screws may be used to attach the cable clamps to some types of surface.

c. Report all discrepancies in accordance with TM 38–750. Shortage of a minor assembly or part that does not affect proper functioning of the equipment should not prevent use of the equipment.

d. If the equipment has been used or reconditioned, see whether it has been changed by a modification work order (MWO). If the equipment has been modified, the MWO number will appear on the front panel near the nomenclature plate. Check to see whether the MWO number (if any) and appropriate notations concerning the modification have been entered in the equipment manual.

Note. Current MWO's applicable to the equipment are listed in DA Pam 310–7.

7–8. Siting of RC Unit

Select an appropriate location for mounting the RC unit. The remote signal cable (CX–10471/SRC–32) and remote drive cable assembly (CX–10472/SRC–32) are 35 feet long; therefore, the site for the RC unit should be within the 35-foot dressed length of the cables. If additional lengths over 35 feet are required, the distance can be increased to 100 feet without increasing the gage of the wire. Select a location for the handset adjacent to the RC unit.

Section III. INSTALLATION AND ADJUSTMENTS OF RC UNIT

7–9. Installation of RC Unit Bracket

Remove the bracket from the RC unit by loosening the two handwheels; mount the RC unit at the selected site with 3/16-inch diameter screws.

7–10. Installation of Remote Connection Cables

a. Dress the remote signal and remote drive cables from the RT unit to the RC unit and cut to proper length or coil up slack at end(s).

Note. Pull the terminal end of the remote drive cable out through the left cable clamp on the RT unit (para 2–6*e*). The connector end will plug into a chassis connector on the RT unit.

b. Remove the two self-tapping screws from the bottom of the RC unit. Slip the case off the RC unit. Insert one end of the remote signal cable through the hole at the rear of the RC unit case.

c. Insert the free end of the remote drive cable through the same hole.

d. Loosen the self-tapping screw that holds the cable clamp on the terminal board apron of the RC unit. If the shield braid of the signal cable is exposed, grasp the cable approximately 5 feet from the end and dress the jacket with a sliding and pulling motion toward the end. This will elongate the jacket and cover the braid to the breakout point of the red and green conductors. Insert both cables under the clamp and tighten the screw.

e. Fasten the conductors of the remote signal cable to the terminals of TB1 and TB2 of the RC unit (fig. 7–3) according to the following chart.

Connector identification	TB1 and TB2 (RC unit) terminal designation
Braid and black	B
White	W
Red	R
Green	G
Brown	T
Blue	S
	P

f. Add a jumper from P to G of TB1.

g. Fasten the conductors of the remote drive cable to terminals of TB3 and TB4 of the RC unit according to the following chart.

Conductor identification	TB3 and TB4 (RC unit) terminal designation
Brown	1
Red	2
Orange	3
Yellow	4
Green	5
Blue	6
Purple	7
Gray	8
White	9
Black	10
Tan	0
Pink	11

h. Replace the cover and self-tapping screws.

i. Mount the RC unit in the bracket.

j. Mount the handset holder in a convenient location with two 8–32 self-tapping panhead metal screws.

7–11. Installation of Remote Components at RT Unit

a. Installation of Arrow Decal.

(1) Locate the *arrow* decal, part of installation hardware.

(2) Before installing the decal, thoroughly clean the area above channel numbers on the RT unit front panel.

(3) Immerse the decal in water until the transparency will slip easily off the backing paper.

(4) Carefully position the arrow on the RT unit panel as shown in figure 7–5, and gently *squeegee* to remove trapped bubbles and excess water.

b. Installation of Remote Drive Assembly. (fig. 7–6).

(1) Remove the RT unit case and let the chassis down on the chains; remove the four binder-head screws that hold the cover plate on the left apron of the RT unit chassis. (Refer to items 1, 2, 3, 7, 8, and 9 on figure 8–13, and figure 2–9.)

(2) Loosen the setscrew that holds the collar of the flexible coupling to the shaft of the RT unit channel selector switch; use the 3/32 Allen wrench (fig. 7–1) and remove the cover plate assembly.

(3) Rotate the RT unit CHANNELS selector switch to position 1.

(4) Install universal joint supplied with the RC unit hardware onto the switch shaft; position one setscrew over the flat portion of the shaft. Install and tighten both setscrews with the 1/16 Allen wrench. Loosen the remaining two setscrews.

(5) Carefully dress the component board through the large hole, followed by the chassis connector and cable and conductors 2, 3, and K.

(6) Install the four small grommets into the four evenly spaced slots around the large hole exposed by removal of the cover plate.

(7) Insert the Ledex motor assembly, carefully dressing the switch wafer terminals through the hole. Before engaging the four smooth studs on the Ledex motor plate into the grommets, rotate the motor so that the two leads out of the motor case dress through the fifth slot at the edge of the hole.

(8) Engage the Ledex shaft and the universal joint sleeve while inserting the studs through the grommets.

(9) While applying sufficient pressure to seat the motor plate against the grommets, install and temporarily tighten the remaining two setscrews ((4) above).

(10) Dress conductors 2, 3, and K through the hole adjacent to TB2 and TB5 of the RT unit. Slip the 1/4-inch grommet over the conductors and insert the grommet into the hole. Fasten the 2, 3, and K lugs under the corresponding terminals of TB2.

c. Installation of Chassis Connector.

(1) Mount the prewired 12-pin connector in the hole adjacent to the motor; use two 1/4-inch 6–32 binder-head screws and speed nuts.

(2) Insert the 12-pin connector end of the remote drive cable into the 12-pin socket.

d. Installation of Control Relay Subassembly. Locate the existing K1–1 mounting hole adjacent to V2 and C47 provided for the remote drive assembly component board (fig. 2–8). Mount by means of the third 1/4-inch 6–32 binder-head screw and two internal lockwashers, one on each side of the chassis.

7–12. Installation of Remote Signal Cable

Loosen the right-hand cable clamp on the RT unit (para 2–6*e*) and thread one end of the remote signal cable through to TB3. Retighten the cable clamp. Loosen the self-tapping screw that holds the cable clamp at the end of TB3. Slip one end of the remote signal cable under the clamp and tighten the screw. Fasten the cable conductors under the terminals of TB3 according to the following chart:

Conductor identification	TB3 (RT unit) terminal designation
Braid and black	B
White	W
Red	R
Green	G
Brown	T
Blue	(S) (unidentified)

7–13. Synchronization of Ledex Motor

a. Turn ON the RECEIVER switch on the RT unit panel.

***Caution:* Always rotate the RF unit CHANNELS selector switch counterclockwise on all radio sets fitted with an RC unit.**

b. Check to see that the RT unit CHANNELS switch is at position 1.

c. Completely back off the two setscrews and, at the same time, (para 7–11*b*(9)) press in on the Ledex motor case.

d. Still holding the motor, set the RT panel CONTROL switch to REMOTE and finaltighten both pairs of setscrews on the universal joint.

Note. Insure that the CHANNELS switch remained on position 1; the universal joint can *drag* after the setscrews have been tightened and then loosened.

e. Verify that, by setting the RC unit selector switch to each position, the RT unit CHANNELS switch is correspondingly positioned.

f. Turn the RECEIVER switch to OFF and the CONTROL switch to LOCAL.

g. Verify that the RC unit panel SQUELCH switch is set to SQUELCH.

h. The C–7270/SRC–32 is now installed and ready for initial adjustments.

7–14. Initial Adjustments

Perform the procedure given in *a* through *d* below at the RT unit before operating the RC unit.

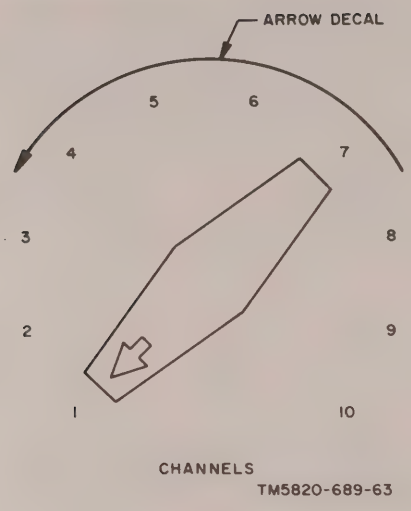


Figure 7–5. Location of arrow decal.

a. Perform the steps outlined in paragraph 3–4*a*, *c*, and *d*; turn the TRANS. FIL. switch to ON.

b. Adjust the VOLUME control to a higher-than-normal level.

c. Adjust the SQUELCH control clockwise until the noise disappears on a channel with no signal (para 7–13*g*).

d. Set the LOCAL–REMOTE switch to REMOTE.

e. Perform the following steps at the RC unit.

(1) Turn the SQUELCH control to OFF.
(2) Adjust the VOLUME control to desired level.
(3) Turn the SPEAKER–HANDSET switch to either SPEAKER or HANDSET.
(4) Key the transmitter and observe that the TRANS. lamp lights.
(5) Turn the channel selector counterclockwise one channel.
(6) Key the transmitter and give a test call, asking for a report.
(7) Repeat (5) and (6) above for each assigned channel.

Note. These operational checks take into account the reported transmission quality relative to station locations and powers, and establish the combat readiness of the RC unit.

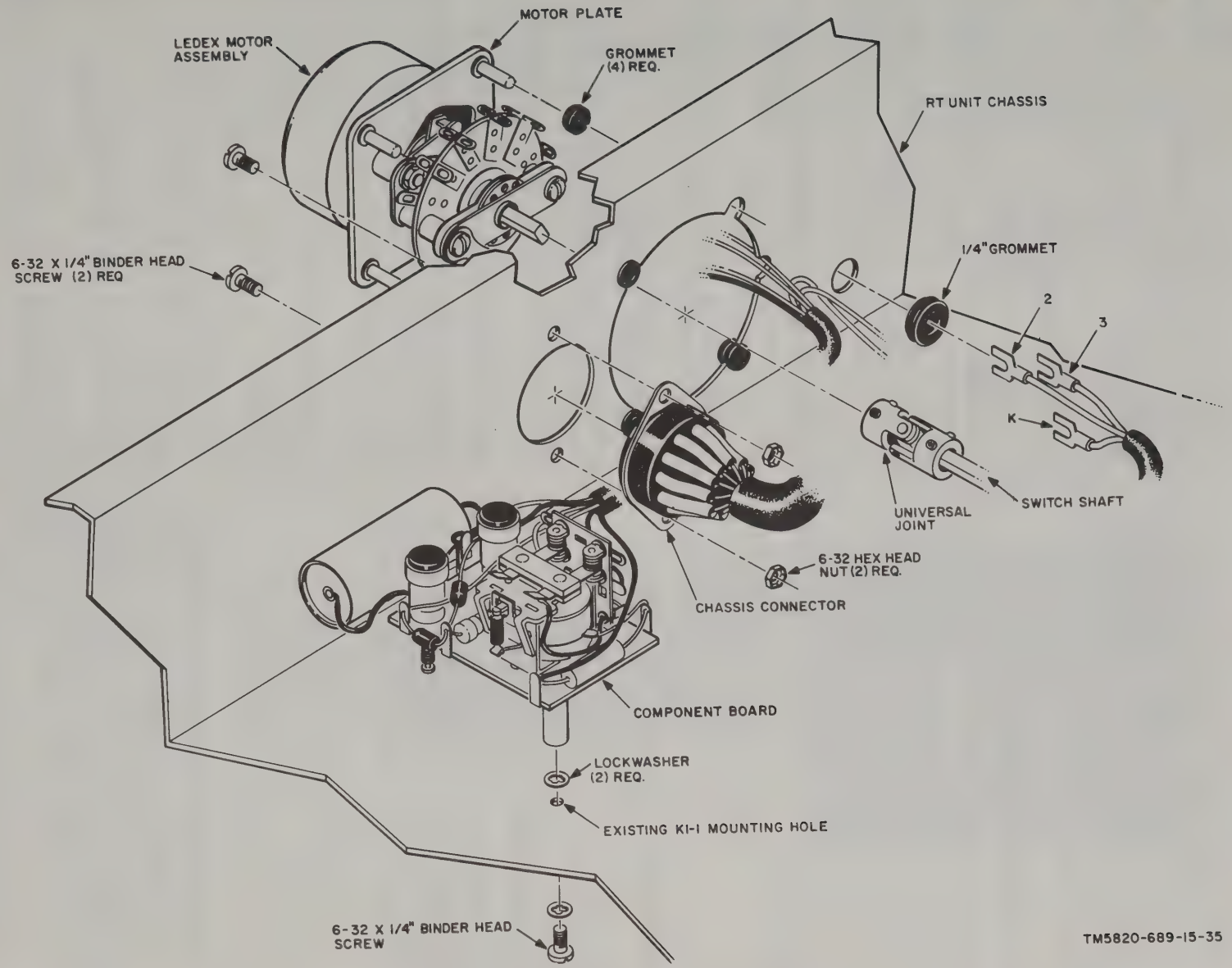


Figure 7–6. Installation of remote drive assembly.

Section IV. OPERATING INSTRUCTIONS, RC UNIT

7–15. Damage From Improper Settings

No damage will result from improper settings of operator's controls. The channel selector switch on the RC unit should be slowly rotated to avoid damage to the Ledex motor on RT unit channel selector switch.

7–16. RC Unit Operator's Controls

The following chart lists the panel indicators and controls and their functions of Control, Remote Switching C–7270/SRC–32 (fig. 7–7):

Note. To operate the RC unit, the CONTROL switch at the RT unit must be at REMOTE.

Control/indicator	Function
Channel selector switch	Selects operating channel.
VOLUME control	Attenuates volume from level preset at the RT unit. In the OFF position, it turns off the handset receiver and loudspeaker.
SQUELCH switch	In the OFF position, disables SQUELCH and automatic noise limiter receiver functions which are preset at the RT unit.
SPEAKER–HANDSET switch.	Switches received audio as indicated.
TRANS. lamp (see note 1).	Indicates that the transmitter is keyed.
RECEIVER lamp (see note 2).	Indicates that the receiver is operating.

Note. 1. The handset press-to-talk switch disables the receiver and keys the transmitter.

Note. 2. When the TRANS. FIL. switch is at OFF (radio silence), the RECEIVER lamp will not light even though the receiver is on monitor.

7–17. Operating RC Unit

a. To operate the radio set from the remote location after making the initial adjustments (para 7–14*a*, *b*, *c*, and *d*), proceed as follows:

(1) Set the RC unit channel selector, SPEAKER-HANDSET, VOLUME, and SQUELCH controls to desired positions.

(2) Using the handset, press the press-to-talk switch for transmitting, release for receiving.

(3) Change channels by positioning the remote channel selector to the desired channel number.

(4) For monitor-only operation, set the RT unit TRANS. switch to OFF (note 2, para 7–16).

b. Shut down the RC unit as follows:

(1) Make sure the remote SQUELCH switch is set to SQUELCH.

(2) At the RT unit, set the LOCAL–REMOTE control to LOCAL.

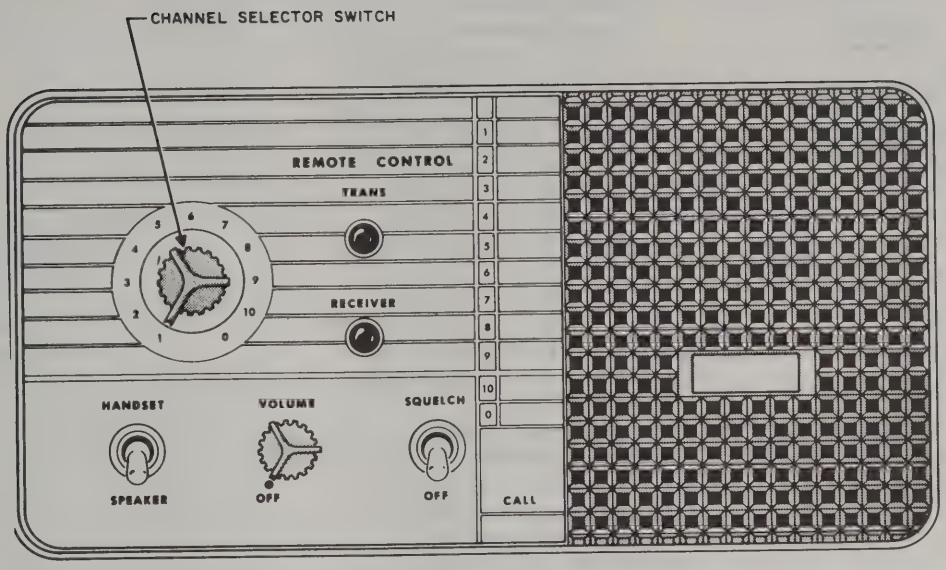


Figure 7–7. RC unit operator's control and indicators.

Section V. ORGANIZATIONAL MAINTENANCE, RC UNIT

Warning: **Be careful when working on or near the low voltage B+ supply connections. Serious injury or death may result from contact with these circuits.**

7–18. Scope of Organizational Maintenance

a. This section covers organizational maintenance procedures for Control, Remote Switching C–7270/SRC–32 which are performed in addition to the operator's preventive maintenance (para 7–20).

b. Organizational maintenance consists of the following:

(1) Quarterly preventive maintenance (para 7–20).
(2) Touchup painting (para 5–7).
(3) Troubleshooting (para 7–22).
(4) Repairs and adjustments (para 7–21).

7–19. Tools, Materials, and Test Equipment Required

The tools, materials, and test equipment required for organizational maintenance are as follows:

a. Tools. Tool Kit, Radar and Radio Repairman TK–87/U.

b. Materials.

(1) Cleaning Compound (FSN 7930–395–6625–366–15).
(2) Cleaning cloth (FSN 8305–267–3015).

Warning: **Cleaning compound is flammable and its fumes are toxic. Provide adequate ventilation. DO NOT use near a flame. Wash off any that spills on your hands.**

c. Test Equipment.

(1) Multimeter TS–352B/U (TM 11–6625–366–15).
(2) Test Set, Electron Tube TV–7D/U (TM 11–6625–274–12).

7–20. Preventive Maintenance Procedures

The preventive maintenance procedures for the RC unit are similar to those described in chapter 4 for the RT unit. Preventive maintenance checks and services for the C–7270/SRC–32 are required daily, weekly, and quarterly.

Note. The operation of the RC unit may be checked by turning the RT unit on and setting the LOCAL–REMOTE switch to REMOTE.

a. Operator's Daily Preventive Maintenance Checks and Services Chart.

Sequence No.	Item to be inspected	Procedure	References
1	Exterior	Clean the RC unit case, panel, and handset.	Para 4–7.
2	VOLUME knob only and switches.	Observe that the action of the knob and the switches is smooth and free of external or internal binding. Tighten or replace loose or damaged knob.	Para 7–21*b*.
3	RECEIVER lamp	Observe that the RECEIVER lamp is lighted.	Note 2, para 7–16.
4	SQUELCH switch	Operate the OFF–SQUELCH switch to verify the indicated functions.	
5	SPEAKER HANDSET switch.	Observe that received audio transfers as indicated.	
6	Handset	Press the push-to-talk switch (key the transmitter) on the handset and observe that the RECEIVER lamp extinguishes and the TRANS. lamp lights.	
7	Channel selector switch	Repeat the procedure given in paragraph 7–14*e*(5), (6), (7), and (8). Check knob tightness. If loose, or damaged, check calibration, and tighten or replace.	Para 7–21*a*.

b. Operator's Weekly Preventive Maintenance Checks and Services Chart.

Sequence No.	Item to be inspected	Procedure	References
1	RC unit mounting	Check all accessible mounting hardware; tighten if necessary.	Fig. 7–1.
2	Cable clamps and clips	Check all accessible clamps and clips; tighten if necessary.	Fig. 7–1.

c. Organizational Quarterly Preventive Maintenance Checks and Services Chart.

Sequence No.	Item to be inspected	Procedure	References
1	Completeness	See that the equipment is complete.	App. B
2	Cleanliness	See that the equipment is clean	Para 4–7.
3	Preservation	Check all surfaces for evidence of fungus. Remove rust and corrosion and spot-paint bare spots.	Para 5–7.
4	Publications	See that all publications are complete, serviceable, and current.	Da Pam 310–4.
5	Modifications	Check DA Pam 310–7 to determine if new, applicable MWO's have been published. All URGENT MWO's must be applied immediately. All NORMAL MWO's must be scheduled.	

6	Spare parts	Check all spare parts (organizational) for general condition and proper storage. There should be no evidence of overstock, and all shortages must be on valid requisitiones.	App. B.

7–21. Organizational Repairs and Adjustments
(fig. 7–7)

a. Replacement and or Calibration of Channel Selector Knob.

(1) Position the RT unit RECEIVER switch to ON.
(2) Turn the RT unit LOCAL–REMOTE switch to REMOTE.
(3) Note the position indicated by the RT until CHANNELS switch.
(4) If the channel selector switch knob on the RC unit is damaged, remove it by loosening the setscrew; use the 1/16-inch Allen wrench and pull it off.
(5) Position the loose or replacement knob on the RC unit to indicate the channel position noted in (3) above and tighten the setscrew.
(6) Verify that the RT unit CHANNELS switch indicates the same number. If not, repeat (3) and (5) above.
(7) Final-tighten the setscrew.

b. Replacement and or Calibration of VOLUME Knob.

(1) Remove the knob by loosening the setscrew; use the 1/16 Allen wrench, and pull it off.
(2) Turn the shaft to the counterclockwise limit.
(3) Install the knob or replacement and position it to indicate OFF.
(4) Tighten the setscrew.

7–22. Organizational Troubleshooting, RC Unit

a. Organizational Troubleshooting Procedure. The organizational troubleshooting procedure for the RC unit is an extension of the operator's maintenance procedures. In addition to visible and audible indications, the organizational repairman will use a multimeter and the RC unit schematic diagrams (figs. 7–8 and 7–9). He will also use the information and illustrations of paragraph 7–5 (figs. 7–2, 7–3, and 7–4) and paragraphs 7–9 through 7–14.

b. Organizational Troubleshooting Chart for Control, Remote Switching C–7270/SRC–32.

Item	Trouble symptom	Probable trouble	Checks and corrective measures
1	RECEIVER lamp does not light, receiver operating properly (note 2, para 7–16).	No low voltage B+ between TB1–P and B of the RC unit.	Check jumper between TB1–P and G RC unit (RCU). Tighten or replace if necessary. Verify internal continuity of RECEIVER lamp circuit. Measure voltage between TB1–P and B (RC unit). This should be low-voltage B+, approximately 300 vdc. If not, measure voltage between TB3–G and B on the RT unit. If low voltage B+ is verified at these terminals, the remote signal cable is defective. Repair or replace. If the symptom persists, refer the RC unit to higher category maintenance.

Item	Trouble symptom	Probable trouble	Checks and corrective measures
2	SQUELCH circuit not activated when switch is set to SQUELCH.	Ground not being removed from TB3–S RT unit. Defective SQUELCH switch or short in the remote signal cable.	Check remote signal cable for short. If cable is shorted, repair or replace it. If remote signal cable is not shorted, check TB2–S circuit and S–2 in RC unit. Repair or send the RC unit to higher category maintenance.
3	SQUELCH circuit not deactivated when switched to OFF.	No ground return to TB3–S (RT unit). Defective switch or open in remote signal cable.	Check continuity of remote signal cable between TB2–S (RC unit) and TB3–S (RT unit). If cable is open, repair or replace it. If cable is continuous, check TB2–S circuit and S–2 in RC unit. Repair or send the RC unit to higher category maintenance.
4	TRANS lamp does not light when keying transmitter.	No modulator low-voltage B+ on TB2–T (RC unit). Dirty or defective push-to-talk switch.	Check TB2–T (RC unit) for modulator low-voltage B+ (approximately 300 vdc). If no modulator low voltage B+, check TB3–T (RT unit) for modulator low voltage B+. If modulator low-voltage B+ exists on TB3–T (RT unit), remote signal cable is open; repair or replace it. If modulator low voltage B+ does not exist on TB3–T (RT unit), check P–T–T circuit from TB3–G (RT unit) and through cable to remote handset switch via TB2–G in RC unit; it should carry low voltage B+ (300V). Check push-to-talk switch ground from handset. If symptom still exists, send the RC unit to higher category maintenance.
5	RECEIVER lamp does not extinguish when keying transmitter, TRANS. lamp lights.	No ground returned to TB1–P (RC unit).	Make sure that the jumper from TB1–P (RC unit) to TB1–G (RC unit) is secure. Check continuity of jumper and lamp wiring. Repair.
6	RT unit CHANNELS switch does not respond to remote selection.	Open in the remote drive cable pin 12 circuit (pink conductor).	At the RT unit, remove P1–1 from J1–1. With probe-type jumper, carefully (+300 vdc) jumper pin 12 of S1–1 to any other channel (pin number). If Ledex does not move, refer the remote drive assembly to higher category maintenance. If Ledex response is normal, plug P1–1 into S1–1 and, at RC unit, jumper pink conductor (TB4–11) to other

Item	Trouble symptom	Probable trouble	Checks and corrective measures
			terminals of TB3 and TB4. If the Ledex response is normal, check and repair TB4–11 circuit in RC unit of send the RC unit to higher category maintenance. If there is still no Ledex response, repair pink conductor in the cable or replace the cable.
7	Ledex motor fails to step to a particular channel.	Open in the circuit of that channel.	Use a procedure similar to that of item 6; carefully use jumpers to energize the faulty channel circuit from the pin 12–TB4–11 control source circuit (+300 vdc). After thus sectionalizing the fault, repair or replace the cable, or refer the faulty unit to higher category maintenance.
8	Ledex motor steps continuously when RT unit LOCAL–REMOTE control is switched to REMOTE.	Intercircuit short (not to ground) in remote drive cable/circuits.	Remove P1–1 from S1–1 at the RT unit. If the symptom persists, refer the remote drive assembly to higher category maintenance. If the symptom occurs only with P1–1 plugged in, turn the REC. power switch to OFF and remove all remote drive cable conductors at the RC unit. Keep the lugs apart, away from ground and personnel; turn power on. If the symptom persists, repair or replace cable. If symptom is not present, check and clear the short in the RC unit drive circuits or send the RC unit to higher category maintenance.
9	Fuse or circuit breaker in power supply blows or rectifier burns out.	Short to ground in the remote drive circuits, including cable.	Check for a direct ground short in the remote drive circuits. Clear the short or refer to higher category maintenance.
10	Either loudspeaker or handset transmitter does not operate when SPEAKER–HANDSET switch is set to corresponding position, receiver operating normally.	Loose connection in the SPEAKER–HANDSET circuit. Defective SPEAKER–HANDSET switch.	Check and secure, if necessary, all speaker and handset circuit connections in the RC unit. If the symptom still exists, refer to higher category maintenance.
11	Insufficient audio volume or no control over the volume.	VOLUME set too low at the RT unit. Defect in the audio circuit from the receiver, including cabling. Defective VOLUME control (RC unit).	Increase volume at RT unit. Correct the audio circuit open or short or refer to higher category maintenance.

Note. For direct support and general support maintenance information for the remote unit, refer to paragraph 8–1 through 8–34.

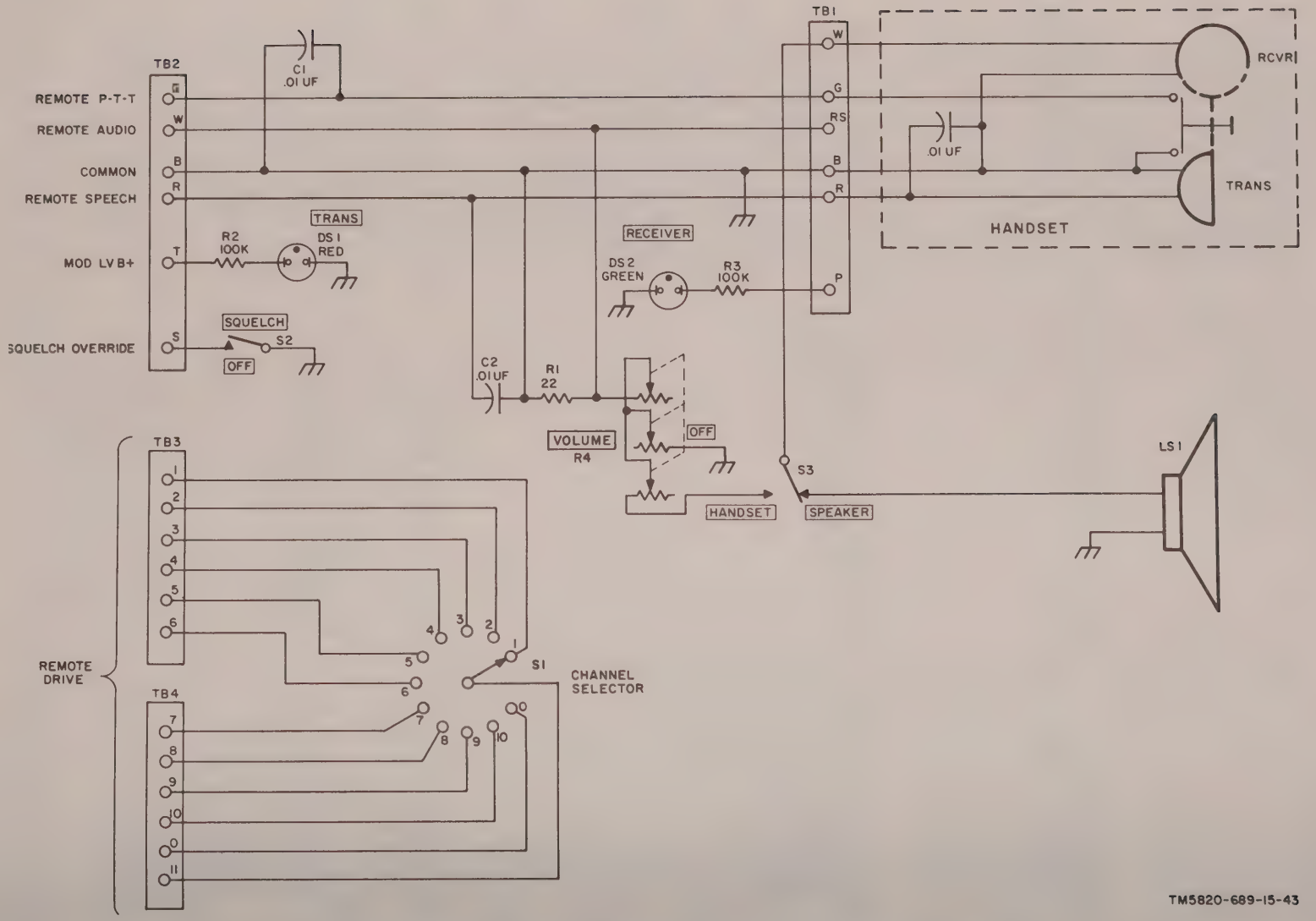


Figure 7–8. Control, Remote Switching C–7270/SRC–32, schematic diagram.

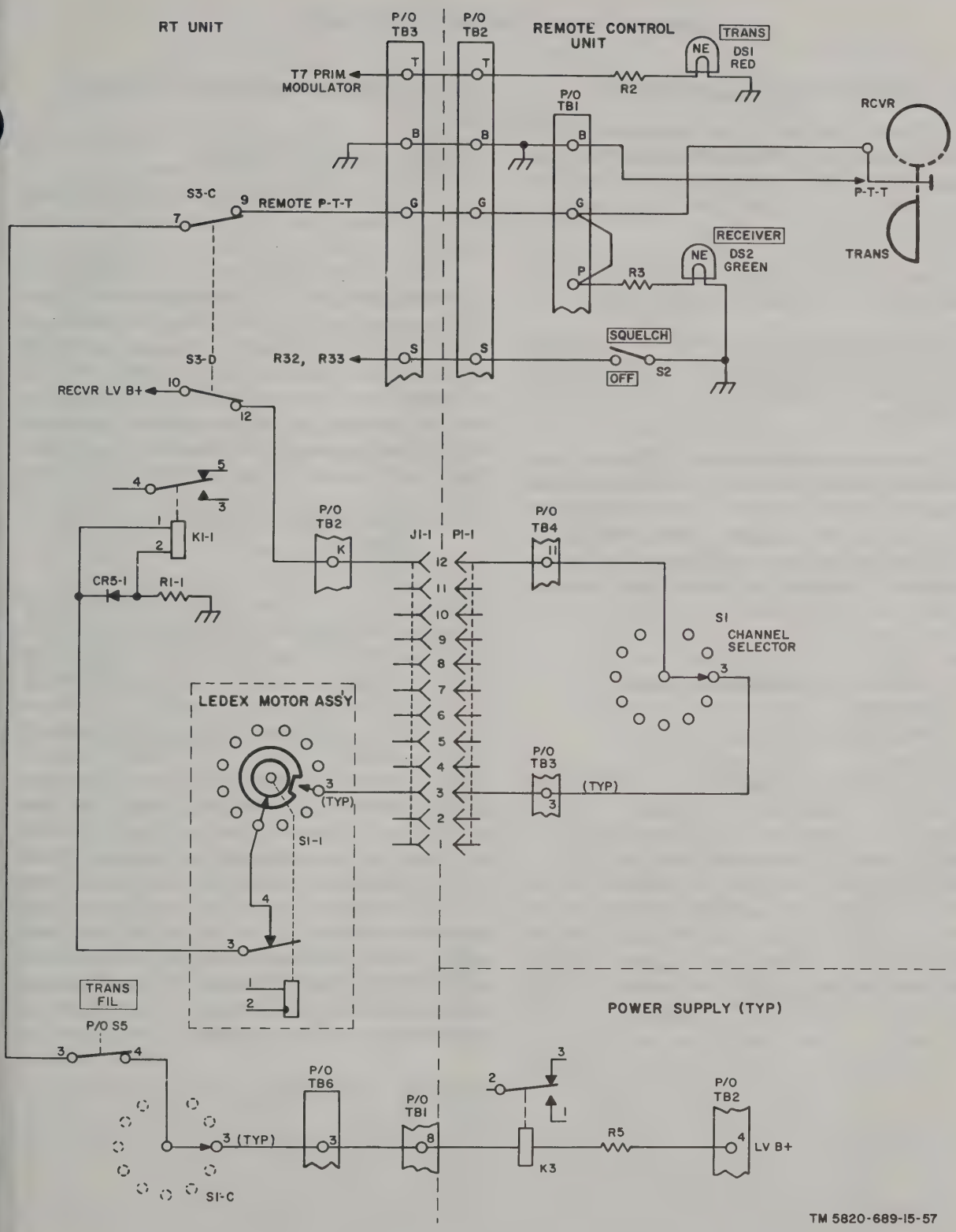


Figure 7–9. Control circuits, remote unit.

Section VI. FUNCTIONING OF RC UNIT

7–23. General Functioning of RC Unit

The RC unit functions as an extension of the operating controls of the radio set except the primary power ON–OFF switch. In effect, the remote functions parallel the local functions with the following limitations:

a. The ON–OFF and LOCAL–REMOTE switches are on the RT unit (fig. 3–1).

b. The remote received audio volume upper level is limited to that preset at the RT unit, but may be attenuated at the RC unit (figs. 7–7 and 7–8).

c. The receiver squelch circuit function can be disabled at the RC unit, but cannot then be enabled at the RT unit. Other remote circuit functions are largely conventional. The squelch, indicator lamp, and channel selection circuits are described in more detail in paragraphs 7–25 and 7–26.

7–24. Functioning of Remote Squelch Control
(figs. 11–5 and 7–8)

The OFF position of SQUELCH switch S2 in the RC unit disables the receiver squelch function by grounding junction of R32–R33 in the RT unit without going through LOCAL–REMOTE switch S3. Thus, only by positioning S2 to SQUELCH can squelch control be returned to the RT unit. Conversely, since the S2 SQUELCH position is an open circuit, squelch action at the RC unit depends upon presetting the SQUELCH control at the RT unit.

7–25. RC Unit Indicator Lamp Functions
(fig. 7–9)

The RC unit RECEIVER or TRANS lamp indicates the function being used.

a. The TRANS lamp is energized by current from the modulator B+ whenever the transmitter is keyed (fig. 5–1).

b. The RECEIVER lamp is energized by low voltage dc via the path shown in figure 7–9. It is extinguished when the transmitter is keyed from the RC unit. However, when the radio set is on monitor (S5, TRANS. FIL., is at OFF), the RC unit RECEIVER lamp has no source of energy. The sound of static will verify the receive function when the remote SQUELCH switch is also at OFF.

7–26. Functioning of Remote Drive Assembly
(fig. 7–9)

The remote drive assembly installed in the RT unit is energized when RT unit CONTROL switch S3 is set to REMOTE. This completes a power circuit through 11-position remote unit channel selector switch S1 to slave-switch S1–1, integral with the Ledex remote drive assembly motor. The Ledex motor is driven by control relay K1–1 until the open position of S1–1 breaks the circuit. The open position coincides with the setting of S1. Primary motor power through the contacts of K1–1 is 32 volts ac (heater power), rectified by CR1–1 through CR4–1 mounted on the K1–1 component board (fig. 8–19). Since the Ledex motor shaft is connected to the RT unit CHANNELS switch shaft, the open position of the slave-switch will be the channel selected by remote S1.

CHAPTER 8
DIRECT AND GENERAL SUPPORT MAINTENANCE

Section I. TROUBLESHOOTING

8–1. General

a. Troubleshooting the Receiver-Transmitter, Radio RT–826/SRC–32 and power supplies PP–4598/SRC–32, PP4599/SRC–32X, and PP–4600/SRC–32Y at direct support and general support maintenance categories includes all the techniques outlined for organizational maintenance and any special or additional techniques required to isolate a defective part. These procedures are not complete in themselves, but supplement the procedures described in organizational maintenance.

b. The systematic troubleshooting procedure, which begins with the operational checks performed at the organizational category, must be completed by sectionalizing, localizing, and isolating techniques.

8–2. Troubleshooting Procedures

Warning: **DANGEROUS VOLTAGES EXIST IN THIS EQUIPMENT. Be careful when working on the remote control circuit or on the 115-volt dc or ac power supply line connections. DON'T TAKE CHANCES, EXTREMELY DANGEROUS VOLTAGES EXIST IN THE FOLLOWING UNITS: Receiver-Transmitter, Radio RT–826/SRC–32; Dynamotor-Power Supply PP–4598/SRC–32; Dynamotor-Power Supply PP–4599/SRC–32X; Power Supply PP–4600/SRC–32Y; and Antenna AS–2048/SRC–32.**

Radiation Hazard: **Tubes type OA2WA and OB2WA are used in this equipment. These tubes contain a small amount of radioactive material and are potentially hazardous when broken. Contact qualified medical personnel immediately in case of an accidental cut. For further instructions, refer to TB SIG 225.**

a. General. To be effective, troubleshooting must be systematic. Generally, it will be necessary to perform a sequence of operational checks, observations, and measurements before a fault will be revealed. The trouble will be traced first to a unit, then to a portion of the unit, and finally to the defective part. Some faults, such as burned-out resistors and arcs, can often be located by sight, smell, and hearing. The majority of faults, however, must be localized by checking voltage and resistance. The sequence of steps is referred to as the sectionalization, localization, and isolation of trouble.

b. Sectionalization. Recognition of abnormalities in operation will help to sectionalize the area of trouble as follows:

(1) If both receiver and transmitter have poor performance, check the power supply voltages.

(2) If the receiver operates normally but the transmitter fails to perform on any channel, check the performance of the transmitter relays, dynamotor(s), and tubes.

(3) If the transmitter operates normally but the receiver fails on all channels, check the receiver antenna, B+ and output circuits, and tubes.

(4) If any one channel fails to operate on either transmitter or receiver, check the crystal, channel tuning, and switch contacts.

c. Localization. Use the troubleshooting charts (para 8–5*a* and *b*) to localize the fault to a single stage or circuit.

d. Isolation. After the trouble is localized to a particular stage or circuit, use voltage and resistance measurements to isolate the fault. Use the resistor and capacitor codes (figs. 11–1 and 11–2) to find the value of components. Use voltage and resistance diagrams (figs. 8–22 and 11–3) for normal readings to compare with those obtained in troubleshooting.

e. Intermittent Troubles. In all these tests, the possibility of intermittent troubles should not be overlooked. If present, this type of trouble may often be made to appear by tapping or jarring the equipment.

8-3. Tools, Materials and Test Equipment Required for DS and GS Troubleshooting

A list of tools, materials, and test equipment is included in paragraph 8-16. Observe the general precautions listed in paragraph 8-4.

8-4. General Precautions

a. If the nature of the trouble is not found through visual inspection of components and wiring, be sure that the faulty condition is not a short circuit. Continued operation under shorted conditions can cause damage to the radio set.

b. If the transmitter section is at fault, check the RF power amplifier tuning. Prolonged transmitter operation under detuned conditions can burn out the power amplifier tubes.

c. Be very careful when working around the antenna tuning coils. High voltage RF is present when the transmitter is keyed. The leads are attached to these coils by special clips. These clips can be moved sideways causing adjacent turns to be shorted together. This will cause faulty transmitter operation. Always inspect the clips and adjust their position at right angles to the coil surface.

8-5. DS and GS Troubleshooting Charts for RT Unit

Use the receiver troubleshooting chart (*a* below), the transmitter troubleshooting chart (*b* below), and the power supply troubleshooting procedures (para 8-6) to locate, isolate, and correct any faults which have developed in the radio set. Use figures 8-1 through 8-4 and 2-8 through 2-11 to aid in locating faulty components.

a. Receiver Troubleshooting Chart. (figs. 11-5, 8-1 through 8-4).

Item	Trouble symptom	Probable trouble	Checks and corrective measures
1	Receiver filament lamp does not light when RECEIVE switch is set to ON.	Burned-out lamp	Replace the lamp.
		Defective power supply	Perform power supply test. Replace defective component.
2	No output, no hum or noise in speaker. (See note below.)	Open speaker leads or defective speaker.	Check speaker and leads.
		Defective output amplifier	Check V7 by substitution. Make voltage and resistance measurements (fig. 11-9). Replace V7 and/or defective component.
3	No output, slight hum in speaker.	Squelch upper threshold control misadjusted.	Readjust control (para 8-13).
		Defective audio amplifier/ squelch tube or stages.	Check V6 by substitution. Make voltage and resistance measurements (fig. 11-9). Replace V6 and/or defective component.
		Defective detector	Check CR1. Replace defective CR1.
4	Weak output on all channels.	Receiver misaligned. Defective amplifier stages.	Align receiver (para 8-11 and 8-12). Make the receiver tests in paragraphs 8-21 and 8-22. Check the tubes by substitution. Make voltage and resistance measurements. Replace the defective tube or component.

Item	Trouble symptom	Probable trouble	Checks and corrective measures
5	Weak output on some channels.	RF and converter stages, misaligned channel selector switch contacts.	Check alignment of weak channels. Check switch contacts. Refer to paragraph 8–7. Realign switch contacts.
6	No signal, but hiss on all channels.	Defective oscillator circuit	Check V2 by substitution. Make voltage and resistance measurements (fig. 1–9). Replace V2 and/or defective component.
7	No signal, but hiss on some channels.	Defective crystals, channel selector switch contacts.	Check crystals. Check switch contacts (para 8–7). Repair switch contacts.
8	Noise level not reduced when SQUELCH control set to A.N.L.	Defective ANL circuit	Check V5 by substitution. Make voltage and resistance measurements (fig. 11–9).
		Defective switch	Check switch. Replace V5 and/or defective component.
9	Receiver noisy on some channels.	Dirty channel selector switch contacts.	Clean and lubricate switch contacts.
10	Squelch inoperative	Improper setting of upper threshold control.	Reset control R21 (para 8–12).
		Defective squelch circuit	Check V6 by substitution. Make voltage and resistance measurements (fig 11-9). REPLACE V6 AND/OR DEFECTIVE COMPONENTS

Note. In the AN/SRC–32Y, the absence of output, hum,or noise in the speaker is an indication of blown fuse F1 in the plug-in, low voltage rectifier assembly. Remove cover of the assembly and check fuse F1. Replace defective F1.

b. Transmitter Troubleshooting Chart (figs. 11–4, 8–1 through 8–4).

Item	Trouble symptom	Probable trouble	Checks and corrective measures
1	Transmitter filament lamp does not illuminate when the TRANS. FIL. switch is set to ON.	Defective lamp	Check the lamp by substitution.
		Defective power supply	Make power supply tests (para 8–6). Replace defective component.
2	Transmitter final amplifier filaments do not heat (within 30 seconds after TRANS. FIL. switch is set to ON).	Defective final amplifier tube	Check tubes V16 through V20 by substitution.
		Defective power supply	Make power supply tests. Replace defective tubes or component.
		Defect in filament circuit wiring.	Make voltage and resistance measurements (fig. 11–3). Repair defective wiring.
3	Transmitter modulator filaments do not heat. V16 through V20 are heated.	Defective modulator/buffer amplifier tube.	Check tubes V10 through V13 and V15 by substitution. Replace defective tube.
		Modulator filament circuit defective.	Make voltage and resistance measurements (fig. 11–3). Replace defective component.
4	Transmitter does not key when handset switch is pressed.	Defective transmitter control circuit.	Check components and wiring in transmitter control circuit (fig. 5–1). Repair defective wiring. Replace defective components.
		Defective handset switch	Check the handset switch operation. Repair or replace handset switch.

Item	Trouble symptom	Probable trouble	Checks and corrective measures
5	FINAL GRID current indication when handset switch is pressed (all channels).	Defective oscillator or buffer amplifier.	Check V14 and V15 by substitution. Make voltage and resistance measurements (fig. 11–3). Replace defective component.
		Maladjusted L5, channel 10 only	Readjust L5 (para 2–18*e*).
		Defective meter jack J3 or J4	Check jacks J3 and J4 without plug inserted. Repair defective jack.
6	Low or no FINAL GRID current indication when handset switch is pressed (some channels).	Defective crystal	Check crystals of inoperative channels. Replace crystal.
		Defective channel selector switch.	Check channel switch. Repair selector switch.
7	Normal FINAL GRID indication, but FINAL PLATE indicates over 130 ma with antenna disconnected and handset button pressed.	Final amplifier plate tank circuit misadjusted.	Perform plate tank circuit alignment (para 2–18*c*).
8	Normal FINAL GRID indication, but FINAL PLATE indicates less than 110 ma with antenna disconnected and handset switch pressed.	Defective final amplifier or panel meter (if reading is zero).	Check tubes V16 through V20 by substitution. Make voltage and resistance measurements (fig. 11–3). Check meter and circuits. Replace defective component.
9	Normal FINAL GRID and FINAL PLATE indication with antenna disconnected and handset switch pressed. FINAL PLATE does not indicate 400 ma ±40 when handset switch is pressed with antenna connected. ANTENNA lamp does not light.	Antenna loading circuit misadjusted.	Perform antenna loading procedure (para 2–18*f*).
		Antenna loading circuit defective.	Make resistance measurements of loading circuit (fig. 11–4). Check antenna circuit sections of channel switch. Repair defective switch section.
10	MOD PLATE does not indicate 150 ma ±10. All other indications normal.	MOD BIAS misadjusted	Adjust MOD BIAS control (para 2–18*d*).

Note. After troubleshooting procedures have been completed and the radio is again operating satisfactorily, it must be subjected to the tests in Section III before it is either returned to the field or placed in storage. This is to insure that the radio set is in combat ready condition.

8–6. DS and GS Power Supply Troubleshooting

a. General. Trouble within the power supply unit may often be localized to a particular section of the unit by a combination of voltage and resistance measurements made at the input and output terminal boards (TB1 and TB2, respectively). The results obtained when performing the receiver and transmitter troubleshooting procedures given in paragraph 8–5 may also aid in determining which area of the power supply is defective. The following paragraphs detail the steps to be taken in making voltage and resistance measurements of the power supplies. Use figures 8–5 through 8–12 to aid in locating faulty components.

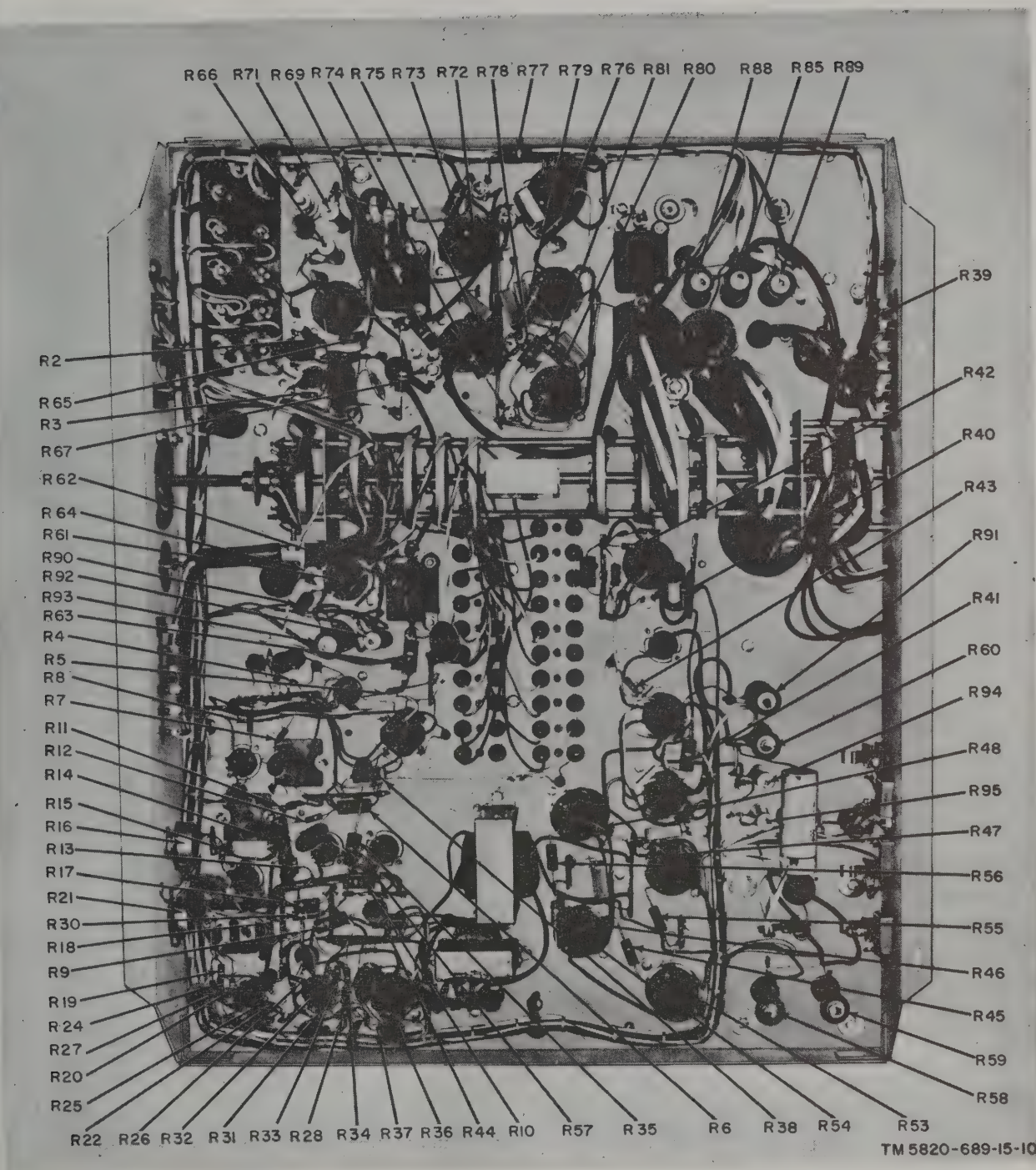


Figure 8-1. RT unit, chassis, rear, resistors.

b. Voltage Measurements. Check for the proper input voltage to the power supply before proceeding to make output voltage measurements. For the dc power supplies, be sure the input polarity is correct. If the input fuses or circuit breakers open repeatedly, pro-

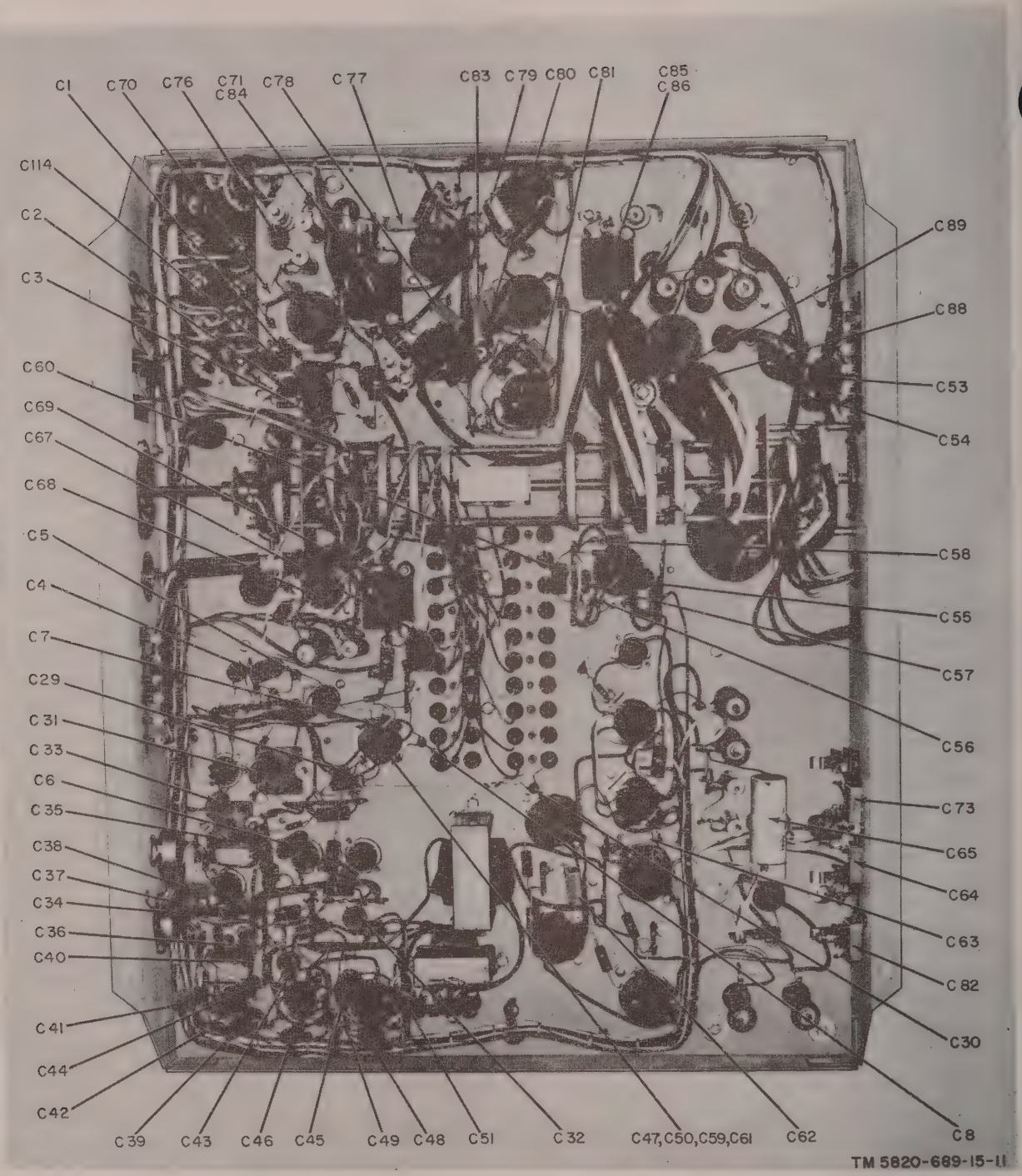


Figure 8-2. RT unit, chassis, rear, capacitors.

ceed directly to resistance measurements to locate and clear the trouble. Voltage measurements at output terminal board TB2 (and at E1 for the dc supplies) should be made with the power supply and RT unit interconnected as for normal operation. These measurements

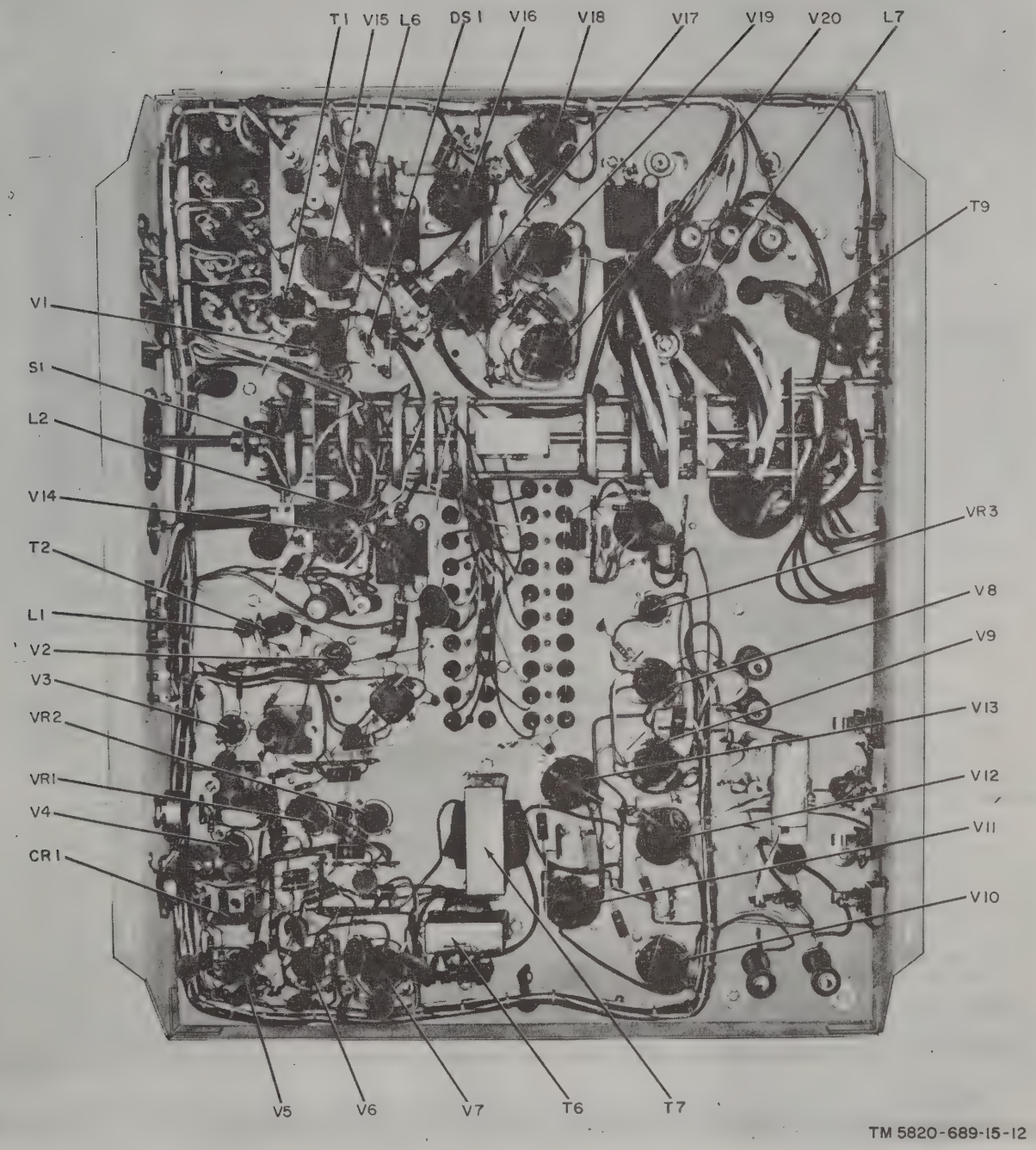


Figure 8-3. RT unit, chassis, rear, components other than resistors and capacitors.

will show the absence of any operating voltage, and will aid in locating open leads in the cable interconnecting power supply and RT unit, or faults in the RT unit control or transmitter keying circuits. The chart below gives the normal operating voltages which should appear at E1 and terminals 1, 2, and 7 of TB2 when measured to ground.

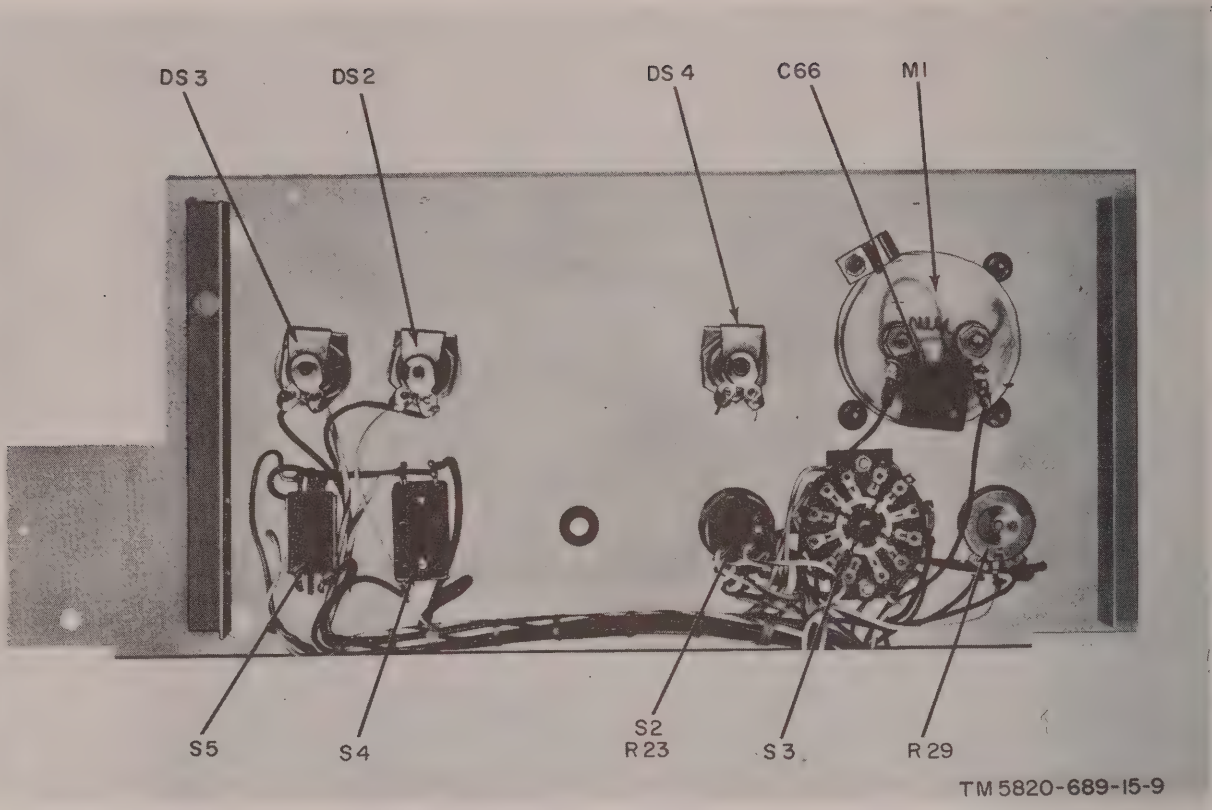


Figure 8-4. RT unit control panel rear.

Terminal No.	Voltage	Terminal No.	Voltage
1	0	6	+600 volts dc
2	0	7	0
3	32 volts ac	8	+300 volts dc[a]
4	300 volts dc	9	115 volts ac[b]
5	-30 volts dc	10	0[c]
6M (E1)	600 volts dc		

[a]Indication with transmitter not keyed; drops to 0 volt dc when transmitter is keyed.
[b]For ac power supply only; dc power supplies will show primary source voltage for this measurement.
[c]Indication with RECEIVER switch at OFF; will indicate same as terminal 9 when RECEIVE switch is set to ON.

c. Resistance Measurements. Resistance measurements must be made with the input leads disconnected from TB1 and interconnecting power cable disconnected from TB2 and E1. Make the resistance tests listed in the charts below. If abnormal results are obtained, make the indicated checks to locate the faulty part.

(1) *Dynamotor-Power Supply PP-4598/SRC-32* (figs. 11-6, 8-5, and 8-6).

Sequence No.	Points of measurements	Normal indication	Procedure
	Between + and - terminals of TB1.	Greater than 1 megohm	If resistance is much lower, check relays K1 and K2 for damaged or fused contacts. Clean and adjust contacts.
2	Same as above, except K1 manually closed.	Approximately 25 ohms	If resistance is significantly higher, check for defective circuit breaker CB1 or CB2, or open in input circuit of converter MG1. If resistance is much lower, check converter MG1 for shorted armature. Replace defective circuit breaker. Replace armature.
3	Same as above, except K2 contacts 1 and 2 jumpered (K1 open).	Less than 5 ohm	If resistance is significantly higher, check for defective circuit breaker CB3 or CB4, or open in input circuits of MG2 and MG3. If resistance is much lower, check dynamotors MG2 and MG3 for shorted armature. Replace defective circuit breaker. Replace armature.
4	+ terminal of TB1 to ground.	Greater than .1 megohm	If resistance is lower, check for shorted wiring. Repair wiring
	- terminal of TB1 to ground.	Greater than 1 megohm	If resistance is much lower, check capacitor C1, C2, or C3 for leakage or shorts. Replace defective capacitor.
6	TB2-1, TB2-2, and TB2-7 to ground.	Zero	Finite resistances indicate poor ground connections. Check for poor solder joints or corrosion at the ground lug. Resolder joints.
7	TB2-3 to ground	Less than .3 ohm	If resistance is significantly higher, check transformer T1 for open winding and check circuit for open wiring. If indication is zero, check circuit for shorts. Replace T1.
8	TB2-4 to ground	100K ohms	If resistance is significantly higher, check resistor R1. If resistance is much lower, check capacitor C4A and C4B for shorts. Replace R1 or defective C4.
9	TB2-4 to TB2-8	Approximately 12K ohms	Check for defective resistor R5 or shorted or open coil on relay K3. Replace R5 or K3.
10	TB2-5 to ground	Approximately 340 to 520 ohms as MOD BIAS control is rotated from full cw to full ccw.	If resistance is significantly higher, check for open circuit; if much lower, check capacitor C5 for leakage or shorts. Replace open resistor or shorted capacitor.

Sequence No.	Points of measurements	Normal indication	Procedure
11	TB2-6 to ground	1 megohm	If resistance is significantly higher, check resistor R7; if much lower, check capacitor C7 for leakage or short, or relay K3 for damaged or fused contacts. Replace defective component.
12	TB2-6 to ground (relay K3 manually closed).	Approximately 75 ohms	If resistance is significantly higher, check fuse F5 and dynamotor MG3 for open circuit, check relay K3 contacts 1 and 2. If resistance is much lower, check dynamotor MG3 for shorted armature. Replace F5, clean K3 contacts, or replace MG3 armature.
13	Terminal 6M (E1) to ground.	1 megohm	If resistance is significantly higher, check resistor R7; if much lower, check capacitor C6 for leakage or short and check for damaged or fused contacts on relay K3. Replace R7 or C6, or clean K3 contacts.
14	Terminal 6M to ground (K3 manually closed).	Approximately 160 ohms	If resistance is significantly higher, check fuse F4 and dynamotor MG2 for open circuits, check relay K3 contacts 7 and 3. If resistance is much lower, check dynamotor MG2 for shorted armature. Replace F4 or defective armature. Clean K3 contacts.
15	TB2-9 to + terminal of TB1.	Approximately 80 ohms	Check coil of relay K1 for open or shorted turns. Replace K1.
16	TB2-10 to - terminal of TB1.	Zero	Check fuse F3 and wiring for open circuit. Replace F3, repair defective wiring.

(2) *Dynamotor-Power Supply PP-4599/SRC-32X* (figs. 11-7, 8-7, 8-8,).

Sequence No.	Points of measurements	Normal indication	Procedure
1	Between + and - terminals of TB1.	Greater than 1 megohm	If resistance is much lower, check relays K1 and K2 for damaged contacts. Check capacitors C1, C2, C3, and C4 for leakage or shorts. Clean relay contacts. Replace defective capacitor.
2	Between + and - terminals of TB1 (K1 manually closed).	Approximately 130 ohms	If resistance is significantly higher, check fuses F1, F2, and F3. Check contacts of relay K1. Check for open input circuit to converter MG1. If resistance is much lower, check for shorted converter MG1 armature. Replace defective fuse. Clean relay contacts. Replace MG1 armature.

Sequence No.	Points of measurements	Normal indication	Procedure
3	Between + and – terminals of TB1 (K2 manually closed K1 open).	Approximately 3.5 ohms	If resistance is significantly higher, check contacts of K2, check dynamotors MG2 and MG3 for open windings. If much lower, check dynamotors MG2 and MG3 for armature shorts. Replace defective armature.
4	+ terminal of TB1 to ground.	Greater than 1 megohm	If resistance is much lower, check C2 and C4 for shorts or leakage. Replace defective capacitor.
5	TB2–1, TB2–2 and TB2–7 to ground.	Zero	Finite resistance indicates poor ground connections. Check for poor solder joints or corrosion of the ground lug. Resolder joint.
6	TB2–3 to ground	Less than .3 ohm	If resistance is significantly higher, check transformer T1 for open winding and check circuit for open wiring. Replace T1.
7	TB2–4 to ground	100K ohms	If resistance is significantly higher, check resistor R5; if much lower, check capacitors C6A and C6B for shorts. Replace defective R1 or C6.
8	TB2–5 to ground	Approximately 360 to 540 ohms when MOD BIAS control is rotated from full cw to full ccw.	If resistance is significantly higher, check for open resistors R2, R3, or R4 for open wiring. If much lower, check for leaky or shorted capacitor C7. Replace defective resistor or capacitor.
9	TB2–6 to ground	1 megohm	If resistance is significantly higher, check resistor R6; if much lower, check capacitor C8 and the contacts of relay K3. Replace defective component. Clean relay contacts.
10	TB2–6 to ground (K3 manually closed).	Approximately 70 ohms	If resistance is significantly higher, check for open fuse F5 or dynamotor MG3 output circuit and check relay K3 contacts 4 and 5; if much lower, check dynamotor MG3 for shorted armature. Replace F5 or MG3 armature.
11	Terminal 6M (E1) to ground.	1 megohm	If resistance is significantly higher, check resistor R1; if much lower, check capacitor C5 and the contacts of relay K3. Replace defective component. Clean K3 contacts.

Sequence No.	Points of measurements	Normal indication	Procedure
12	Terminal 6M to ground (K3 manually closed).	Approximately 210 ohms	If resistance is appreciably higher, check for open fuse F4 or output circuit of dynamotor MG2. Check contacts 7 and 8 of relay K3. If much lower, check dynamotor MG3 for shorted armature. Replace F4. Clean relay contacts. Replace defective MG2 or MG3 armature.
13	TB2-9 to + terminal on TB1.	Approximately 3,600 ohms	Check coil of relay K1 for open or shorted winding. Replace K1.
14	TB2-10 to - terminal on TB1.	Zero	Check fuse F1. Replace F1.

(3) *Power Supply PP-4600/SRC-32Y* (figs. 11-8, 8-9 through 8-12).

Sequence No.	Points of measurements	Normal indication	Procedure
1	Between both terminals of TB1.	Greater than 1 megohm	If resistance is much lower, check capacitors C1 and C2 for leakage. Replace C1 or C2.
2	Each terminal of TB1 to ground.	Greater than 1 megohm	If resistance is much lower, check capacitors C1 or C2 for leakage or short. Replace C1 or C2.
3	TB2-1, TB2-2, and TB2-7 to ground.	Zero	Finite resistance indicates poor ground connection. Check for poor solder joints or corrosion at ground lug. Resolder joint.
4	TB2-3 to ground	Less than .3 ohm	If resistance is significantly higher, check transformer T1 for open winding and check for open wiring. If indication is zero, check circuit for shorts. Replace T1. Repair circuit wiring.
5	TB2-4 to ground	100K; with reversed leads, 50K.	If resistance is significantly higher, check resistor R1. If indication remains unchanged when leads are reversed, check fuse F1, coil L1 and transformer T1 for open circuit, if resistance is much lower, check capacitors C3A and C3B for leakage or short. Replace defective component.
6	TB2-5 to ground	Approximately 360 to 520 ohms as BIAS ADJ control is varied from full cw to full ccw position.	If resistance is significantly higher, check for open resistors R2, R3, R4; if much lower, check capacitor C4 for leakage or short. Replace defective resistor or capacitor.

Sequence No.	Points of measurements	Normal indication	Procedure
7	TB2–6 to ground	1 megohm	If resistance is significantly higher, check fuse F4 and resistor R22 for open circuit; if much lower, check capacitor C10 for leakage or short. Replace defective component.
8	TB2–6 to ground (K1 manually closed).	Approximately 22K ohms	If resistance is significantly greater, check resistors R19, R20, R21 for open circuit, check contacts of relay K1. If much lower, check capacitors C8 and C9 for leakage or shorts, check for shorted rectifier diodes. Replace defective component. Clean K1 contacts.
9	TB2–9 to ground	Greater than 1 megohm	If resistance is much lower, check circuit for shorts. Repair circuit wiring.
10	TB2–10 to ground	Greater than 1 megohm	If resistance is much lower, check circuit for shorts. Repair circuit wiring.
11	TB2–4 to TB2–8	Approximately 18K ohms	Check resistor R5 and coil of relay K1 for open or shorted winding. Replace defective R5 or K1.

8–7. Replacement of CHANNELS Selector Switch Section
(fig. 8–13)

When troubleshooting procedures disclose need to replace a broken or faulty selector switch section, proceed as follows:

a. Use exploded view of switch (fig. 8–13), RT unit schematic diagrams (figs. 11–4 and 11–5), and component designation illustrations as required. For radio sets fitted with Control, Remote Switching C–7270/SRC–32, also use figure 7–6.

b. With the RT unit case removed and the chassis lowered onto the chains, remove the cover plate or the remote drive assembly on the left apron of the chassis (para 7–11*b*).

c. Refer to figure 8–13 and remove the shaft and detent assembly from the right side chassis apron as follows:

(1) Loosen the eight 4–40 nuts (4, fig. 8–13) at the ends of the switch section threaded tie rods (6 and 28) to reduce binding.

(2) Loosen the Allen setscrew in the bevel gear (18).

(3) Remove the two detent plate screws (31), preserving the nuts and washers.

(4) Withdraw the shaft and detent assembly; catch and preserve the bevel gear if required. Be very careful not to damage switch section contacts; if a rotor binds on the shaft, all the lateral pressure is transmitted to the rotor blade and contacts.

Note. For the following operations, carefully unsolder accessible connecting wires and remove from the faulty section; unsolder and remove the remaining wires when the section can be moved.

d. If section S1–N (26) is faulty, proceed as follows:

(1) Remove and preserve the nuts and washers from the two threaded rods (28) at the *inside* of the plate (24).

(2) Loosen the nuts at the two bushings (25).

(3) Holding the loosened nut at the bushing and the one adjacent to the chassis apron (27), unscrew each rod

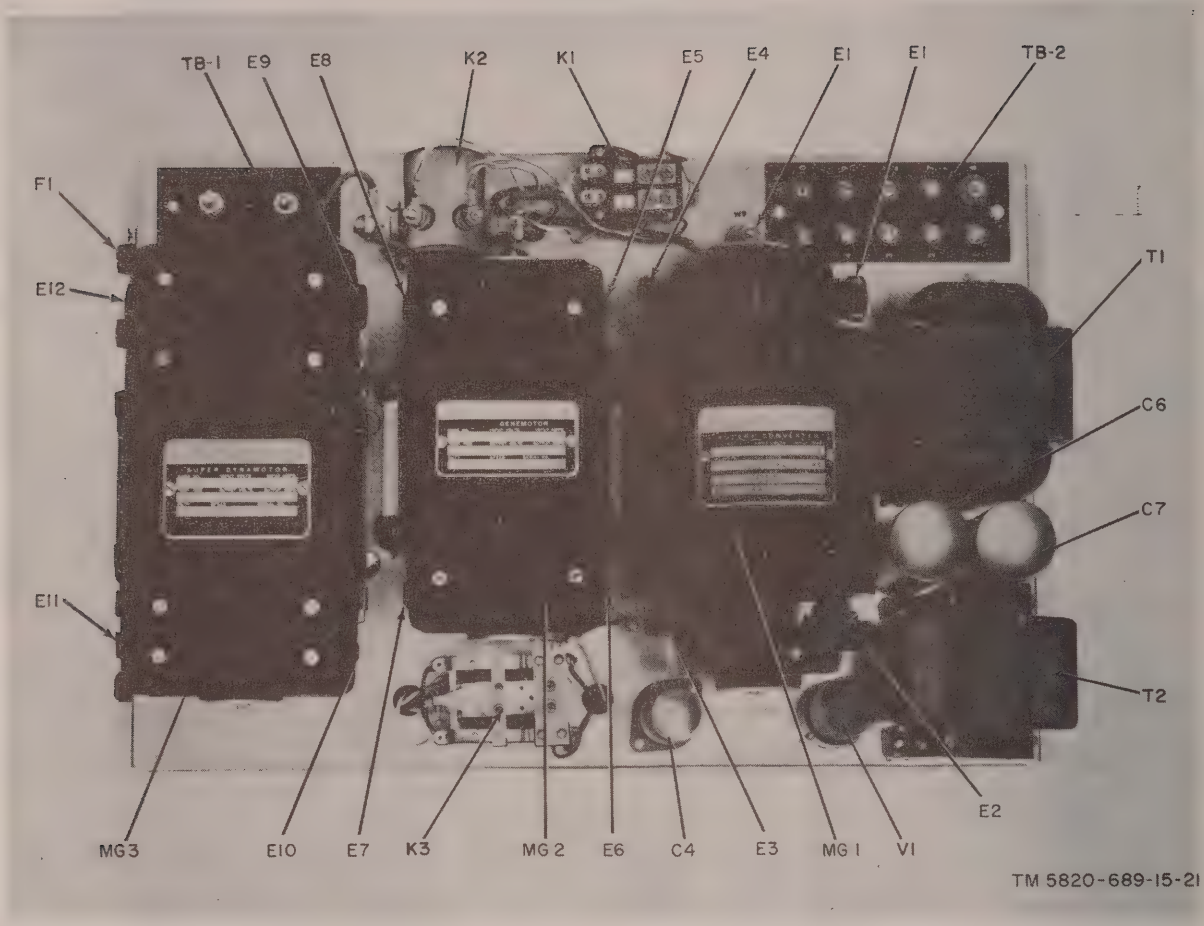


Figure 8–5. 24 vdc supply, chassis, top.

(28) thereby withdrawing them far enough to free section S1-N.

Note. Catch and preserve the hardware items as the rods are withdrawn, especially the phenolic flat washers (12).

(4) Insert replacement section S1–N; make sure to resolder wires to terminals which will not be accessible later.

(5) Turn the rods back into the assembly, *threading* the items on in the reverse order.

Note. Make certain that the phenolic flat washers are installed to cushion each side of the ceramic, and that bushings of identical length are *always* placed opposite (one on each rod) to avoid cracking ceramic when rod nuts are tightened.

(6) Successively tighten nuts, working each direction from section S1–N, using only moderate force on the two *middle* ones.

(7) Final-tighten the end nuts and replace the remaining wires.

e. If one of sections S1–A through S1–M is faulty, proceed as follows:

(1) Unsolder and remove accessible wires from faulty section.

(2) Remove the nuts and washers from the two rods (6) at the end adjacent to section S1–N.

(3) Follow the procedure given in *d* above. Catch and preserve each item as the rods are withdrawn toward the left side of the chassis only far

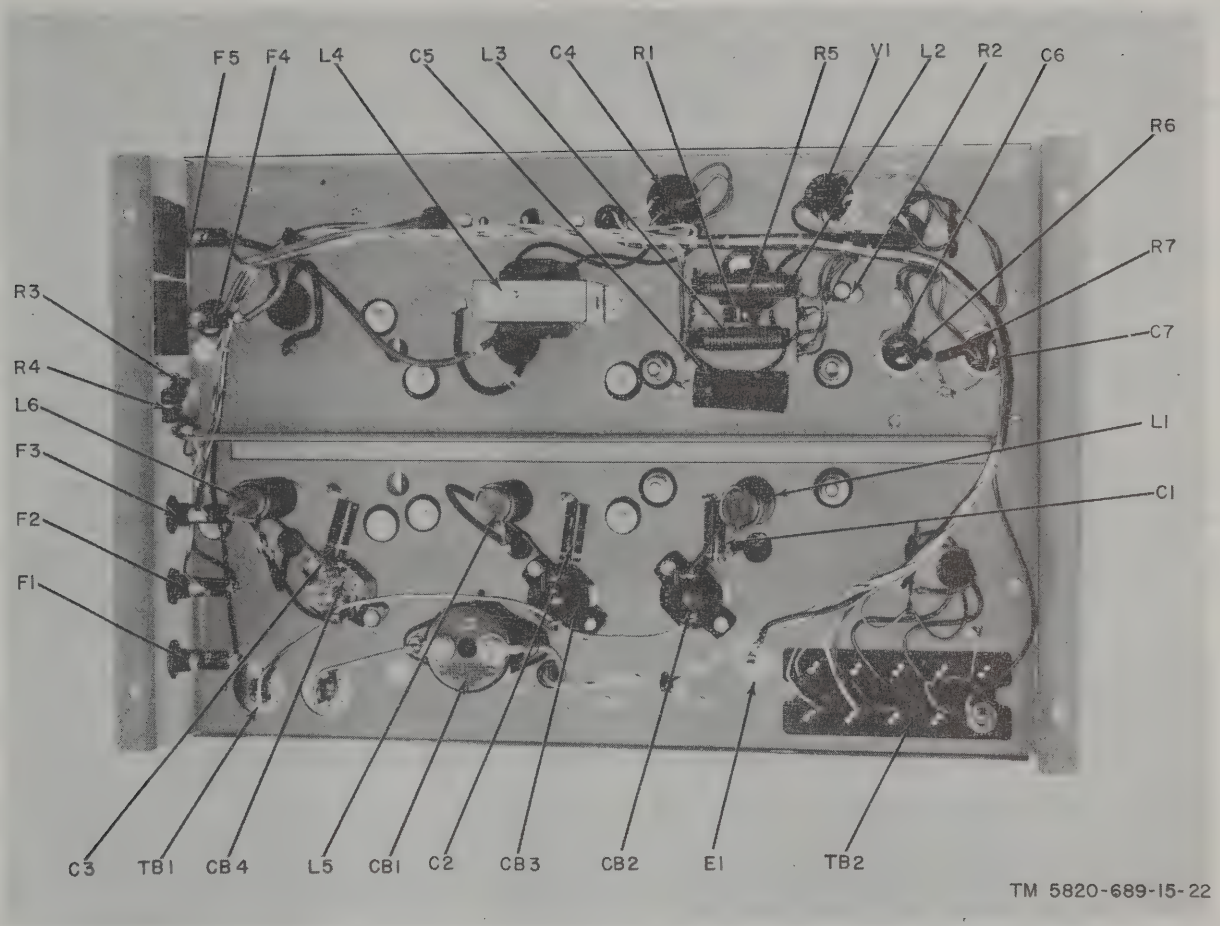


Figure 8–6. 24 vdc supply, chassis, bottom.

enough to free the faulty section ((6) below).

(4) Remove the section, unsoldering any remaining wires.

(5) Install the new section by reversing the removal procedures ((6) below).

(6) *General notes and precautions.*

(*a*) Unless the rods are withdrawn completely (to replace a section near the left chassis apron), they must be protected from any bending while exposed. If they are bent, breakage of switch sections is likely when the rod nuts are tightened upon reassembly.

(*b*) Make sure that each ceramic section is protected by two phenolic flat washers, one on each side, when reassembling. (Do not use them on the two phenolic sections.)

(*c*) Make sure that bushings of identical length are opposite between each pin sections so as to avoid "cocking" of sections when the rod nuts are tightened.

(*d*) Remember to resolder inaccessible wires before assembling section.

(*e*) Observe the "binding" precaution of *c*(4) above for the next step.

f. Insert the shaft and detent assembly, making sure that all section rotor blades are aligned to the same angle, and replace the bevel gear (on the proper side of the gearbox) if it was removed.

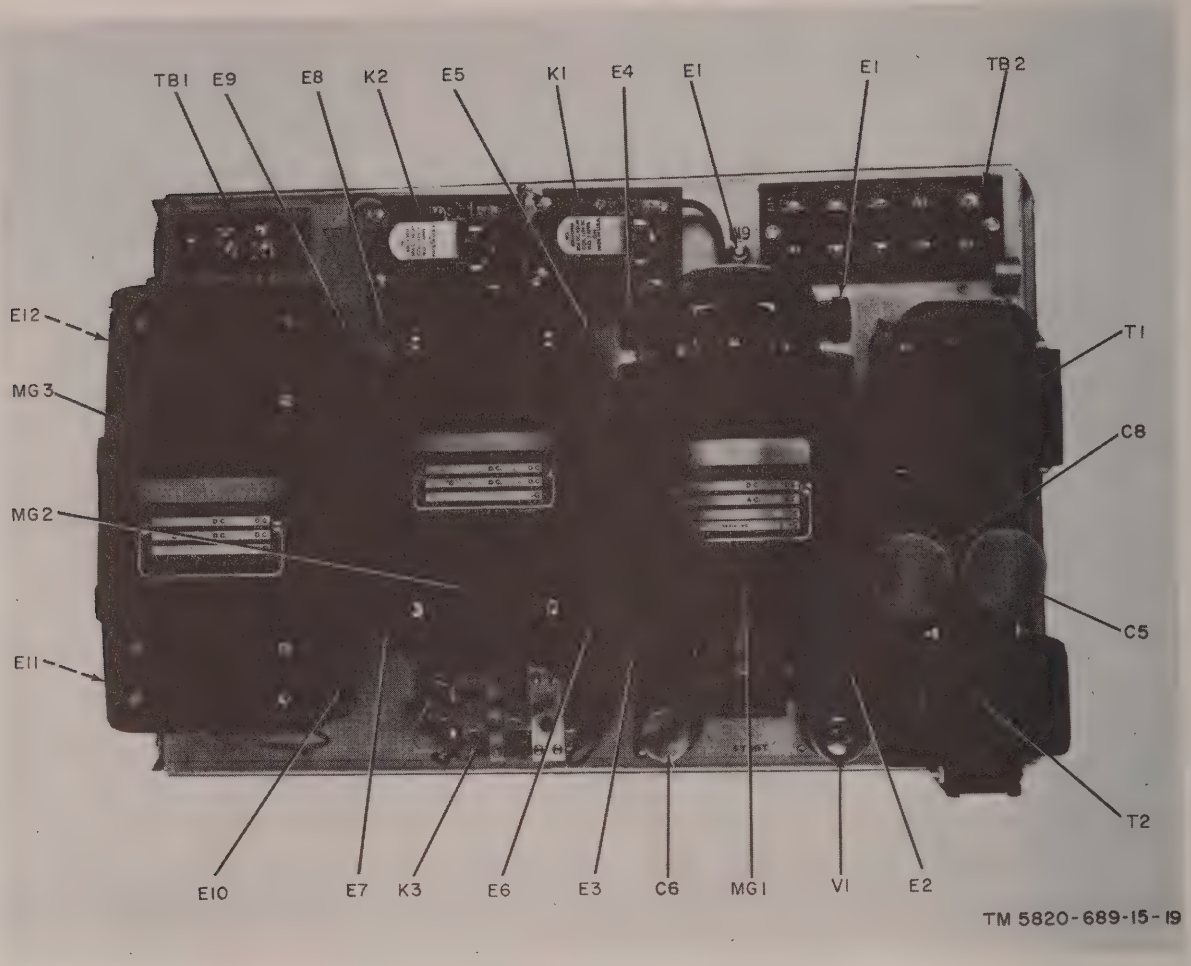


Figure 8–7. 110 vdc supply, chassis, top.

g. Install the detent (item 30) mounting screws, washers and nuts.

h. Install the cover plate assembly (item 3) or reinstall the remote drive assembly.

i. Perform the operational procedure listed in paragraph 7–17.

CHANNELS SWITCH COMPONENT CHART

Item number	Qty	Description
1	4	Screw 6–32 x 3/4" binder-head
2	8	Internal lockwasher #6
3	1	Cover plate assembly
4	14	Hex nut 5–40 x 3/16", AF brass
5	10	Lockwasher split, #5, .2390Dx. 031T, STL/Cad
6	2	BSW tie rods, 12" long, 5–40
7	--	Left apron of RT unit chassis
8	2	Flat washer, #6, 1/32" thick
9	4	Hex nut 6–32 x 1/4"
10	2	Switch, wafer, 1 pole, 11 pos. bakelite S1–A and –D
11	4	Spacer #5 x 1/4", STL/CAD
12	48	Flat washer, #5 x 1/4 OD x 1/16, brn pheno
13	11	Switch wafer, 1 pole, 11 pos. ceramic S1–B, –C, –E through –M
14	16	Spacer #5 x 3/8", STL/Cad
15	1	Shaft support bracket
16	1	Bushing 1/4" ID, nylon, 1/16" panel
17	2	Spacer #5 x 2", STL/Cad
18	2	Gears, brass bevel

CHANNELS SWITCH COMPONENT CHART

Item number	Qty	Description
19	1	Gear box, aluminum
20	2	Bushing, 1/4", 1D, nylon 1/8" panel
21	4	Spacer #5 x 5/8", STL/Cad
22	4	Spacer #5 x 1/2", STL/Cad
23	2	Spacer #5 x 3/4", STL/Cad
24	1	Support bracket and shield
25	2	Spacer #5 x 1", STL/Cad
26	1	Switch wafer, 1 pole, 11 pos. KEL–F S1N
27	--	Right apron of RT unit chassis
28	2	BSW tie rods, 2 1/2" long, 5–40
29	2	Flat washer, #5, 1/32" thick
30	1	Detent and shaft assembly
31	2	Screw 5–40 x 3/8" with captive internal lockwasher

8–8. Replacement of Low-Voltage Rectifier in Power Supply PP–4600/SRC–32Y

A spare plug-in low voltage rectifier assembly is provided in the spare parts kit in order to reduce downtime while the assembly is being repaired. Replace the plug-in low voltage rectifier assembly as follows:

a. Remove the ac power input from the power supply.

b. Remove the power supply cover.

c. Remove the plug-in rectifier assembly.

d. Plug the spare rectifier assembly into socket XP1.

e. Replace the power supply cover.

f. Restore the ac power to the input of the power supply.

Note. A 12X4 electron tube may be used in place of the plug-in rectifier assembly FOR EMERGENCY Use Only when a plug-in rectifier assembly is not available. The current drain of the equipment exceeds the current capability of the 12X4, and long periods of operation reduces its useful life.

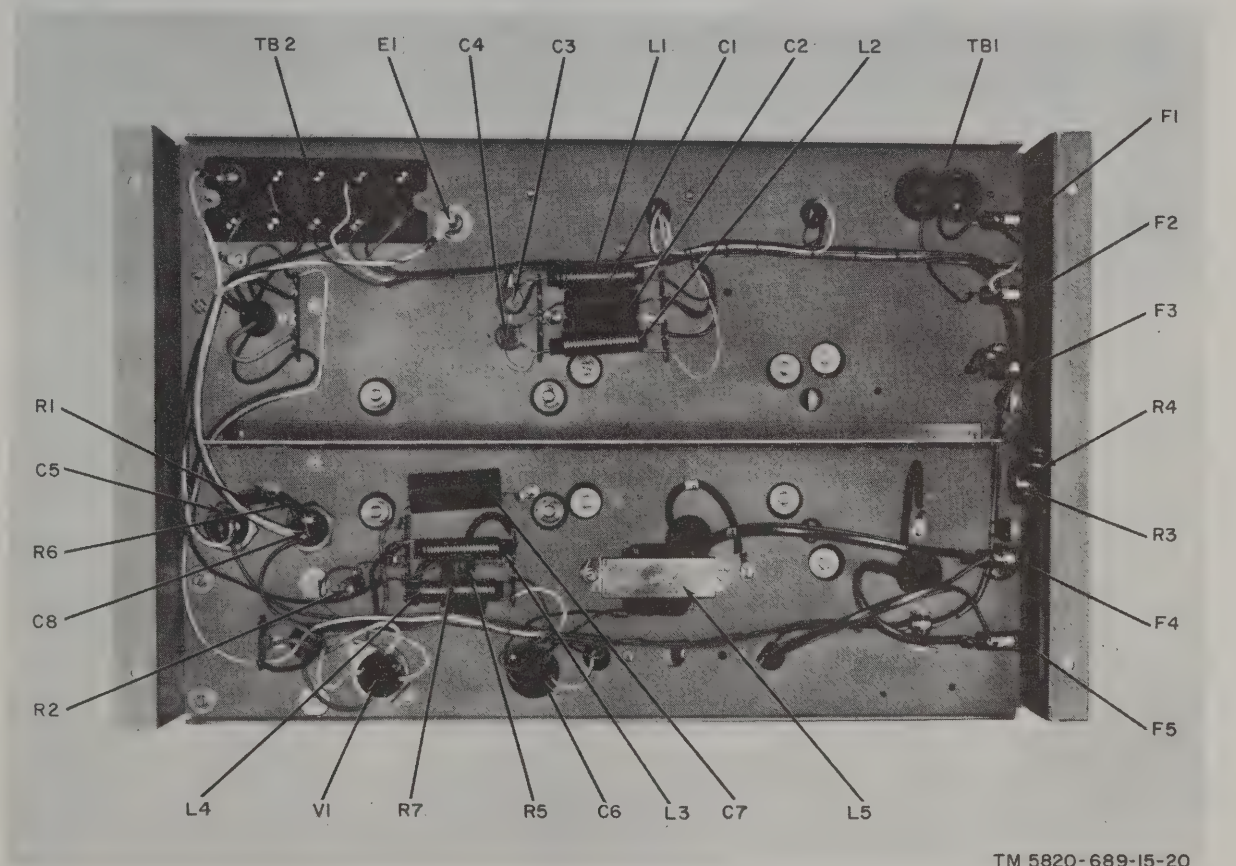


Figure 8–8. 110 vdc supply, chassis, bottom.

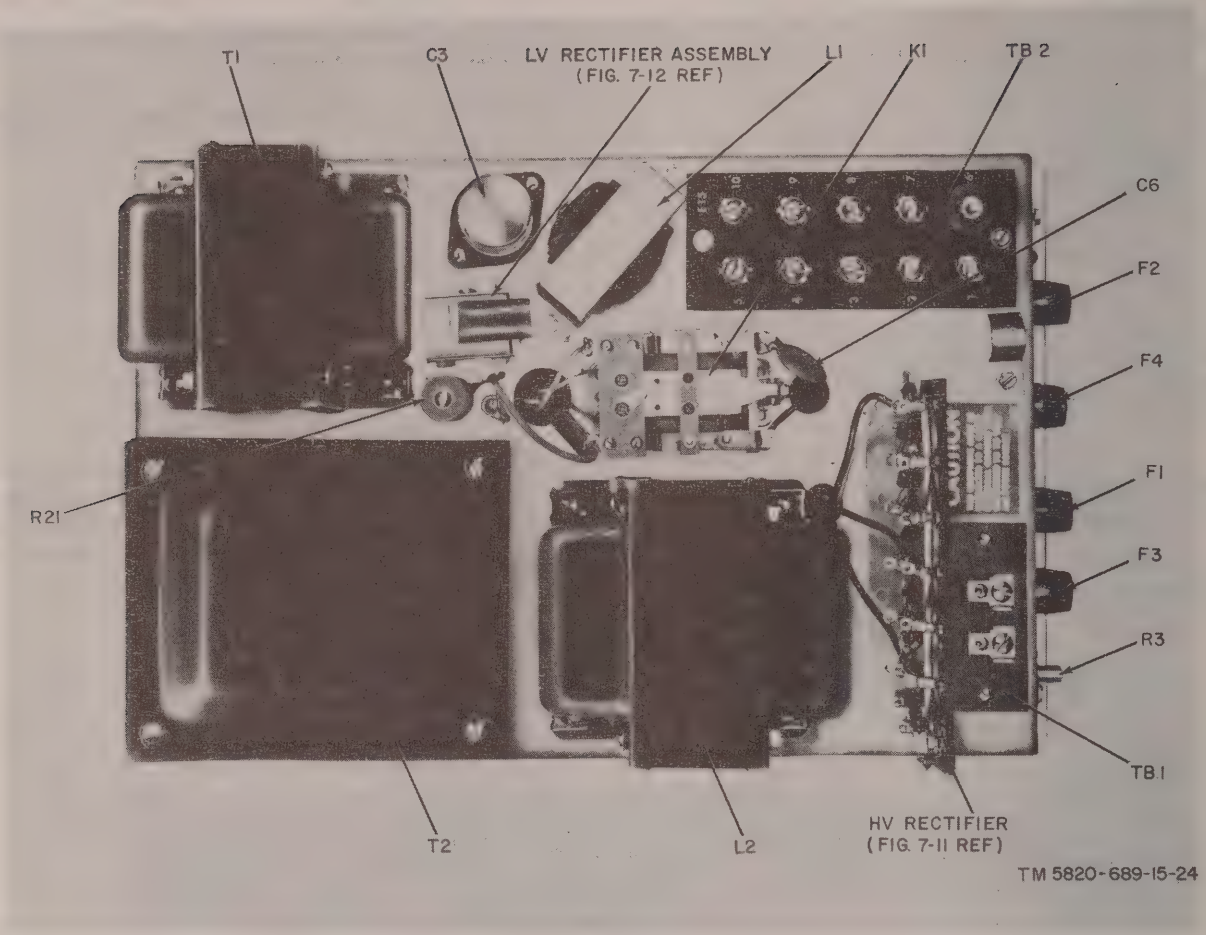


Figure 8-9. Ac supply, chasis, top.

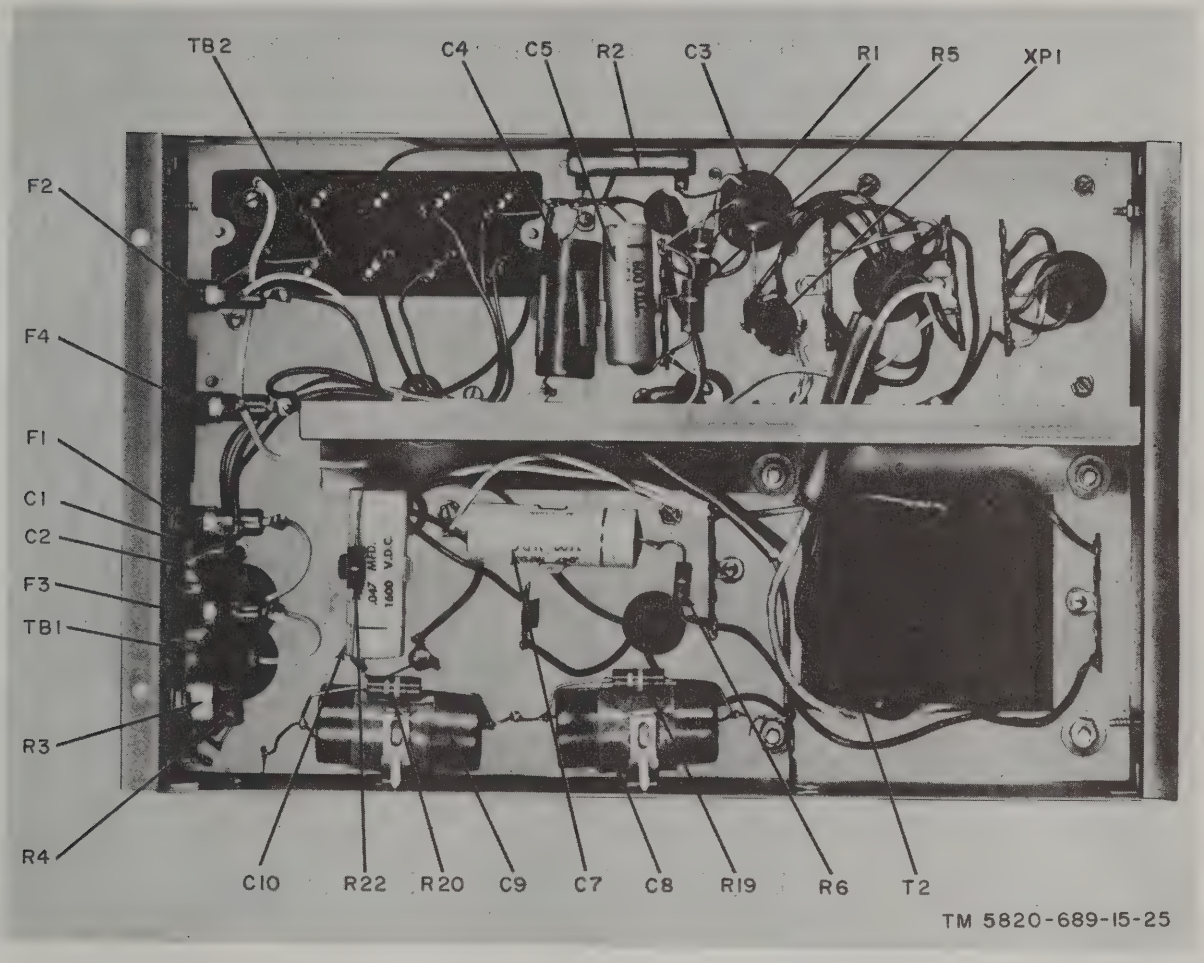


Figure 8–10. Ac supply, chassis, bottom.

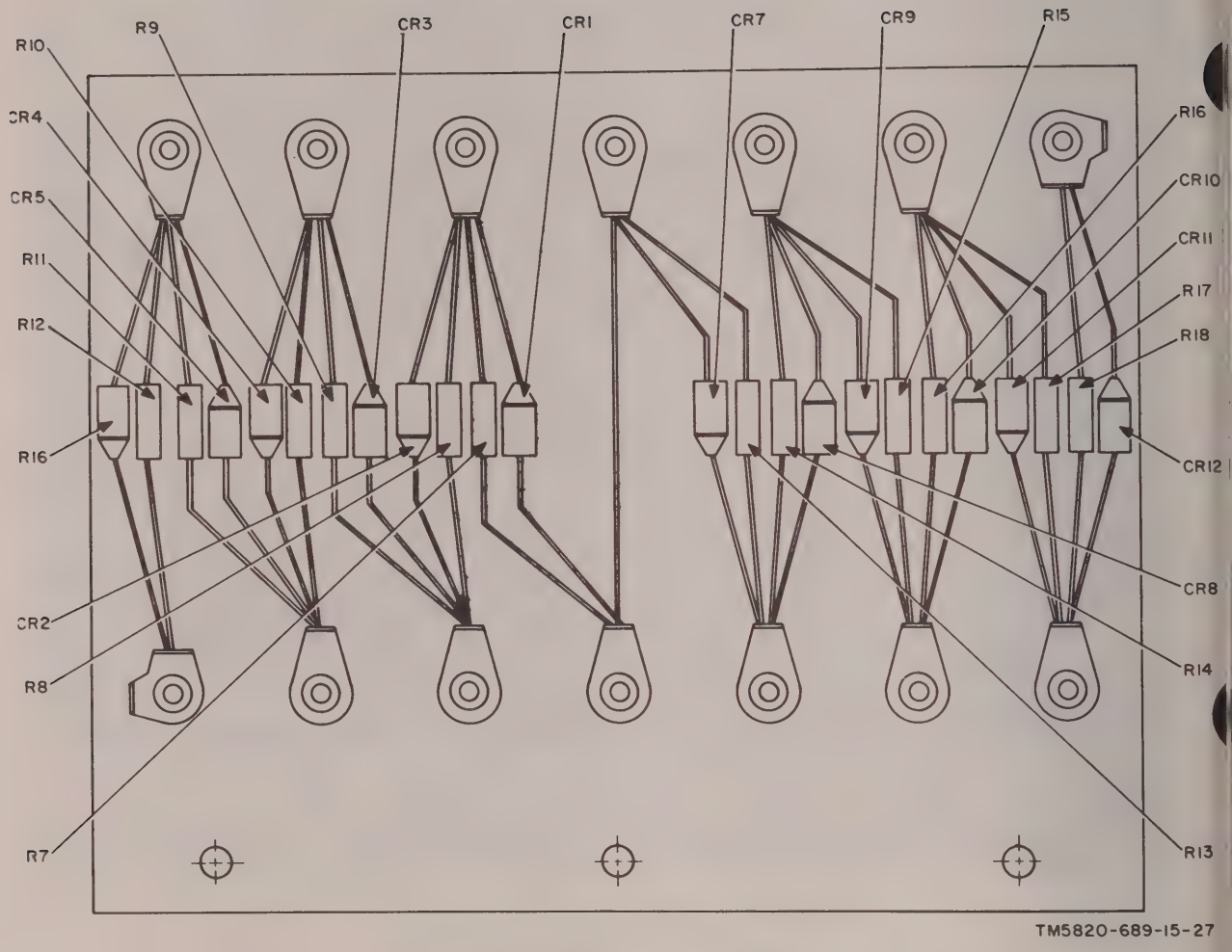


Figure 8–11. Hidden parts, ac supply, hv rectifier.

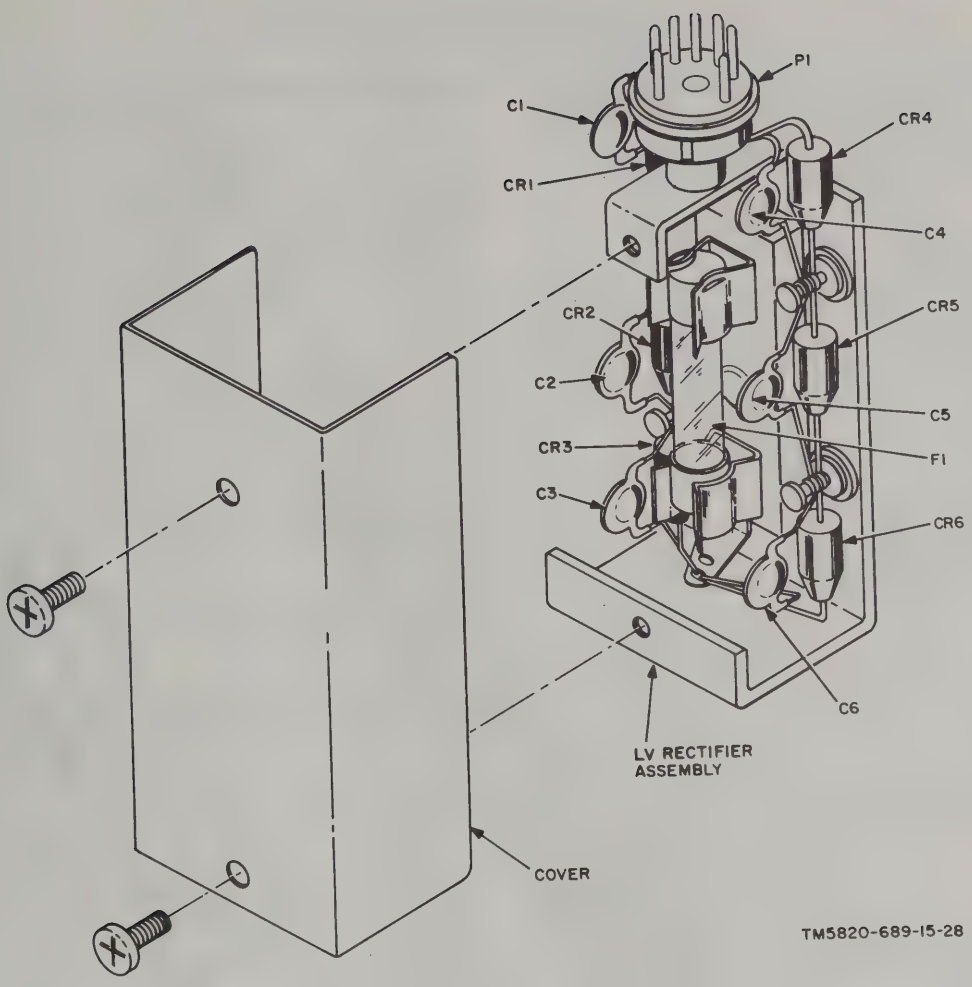


Figure 8–12. Hidden parts, lv rectifier assembly.

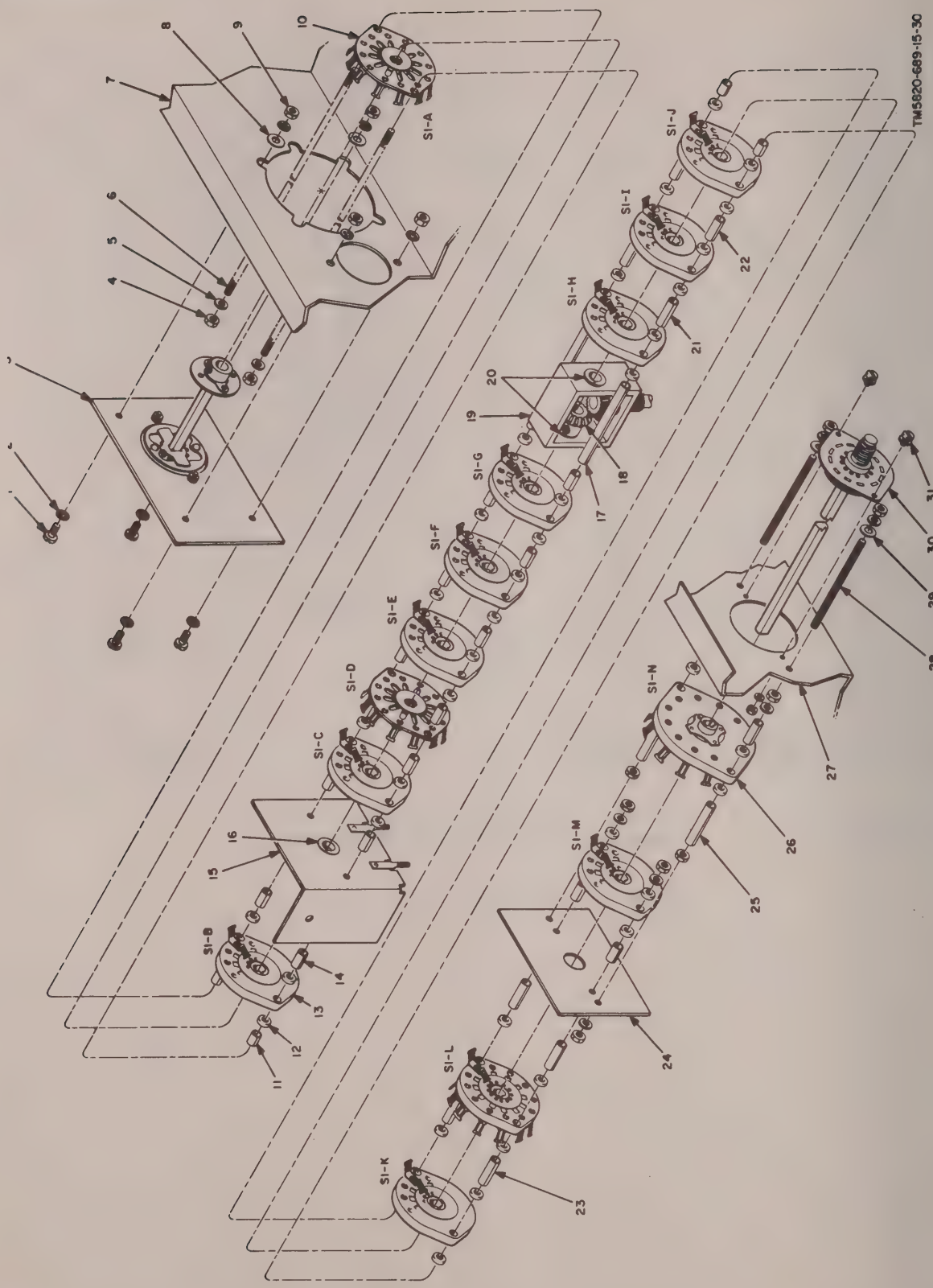


Figure 8-13. Components, rotary switch, CHANNELS, RT unit.

Section II. ALIGNMENT PROCEDURES

8–9. Test Equipment, Tools, and Materials Required for Alignment

The following test equipment, tools, and materials are required for alignment and testing of Radio Set AN/SRC–32. Fabrication procedures for fabricating IF and RF cables are given in paragraph 8–10.

a. Test Equipment.

Equipment	Technical manual
Signal Generator AN/URM–25D.	TM 11–5551D
Multimeter ME–26C/U	TM 11–6625–200–12

b. Tools. The required tools are funished in Tool Kit Radar and Radio Repairman TK–87/U.

c. Materials. Specially fabricated IF and RF cables (para 8–10), are required.

8–10. Fabrication of Alignment and Test Cables
(fig. 8–14)

Fabricate the IF and RF alignment and test cables as follows:

a. Fabrication of IF Test Cable. Fabricate the IF test cable as follows:

(1) Cut a 4-foot length of RG–58/U cable.

(2) Remove the outer jacket 2 1/2 inches on one end of the cable; do not nick the braid.

(3) Mount the banana plug and the alligator clip as shown in figure 8–14.

(4) Mount jack UG–88/U on the other end of the cable as follows:

(*a*) Cut end of cable even.

(*b*) Remove outer jacket 1/2 inch; do not nick the braid. Insert cable into the UG–88/U nut.

(*c*) Push braid back, and remove 1/8 inch of insulation and conductor.

(*d*) Taper the braid.

(*e*) Slide sleeve of jack over tapered braid. Fit inner shoulder of sleeve squarely against end of jacket.

(*f*) With sleeve in place, comb out braid, fold back smoothly against the sleeve and trim 3/32 inch.

(*g*) Bare center conductor 1/8 inch; do not nick conductor.

(*h*) Tin center conductor of cable. Slip female contact in place and solder. Remove excess solder. Be sure cable dielectric is not heated excessively and swollen so as to prevent dielectric entering body.

(*i*) Push sleeve into body of the UG–88/U as far as it will go. Slide nut into body and screw into place with wrench, until it is moderately tight. Hold cable and shell rigidly and rotate nut.

b. Fabrication of RT Test Cable. Fabricate the RF test cable as follows:

(1) Cut a 4-foot length of RG–58/U cable.

(2) Remove the outer jacket 2 1/2 inches on one end of the cable; do not nick the braid.

(3) Mount the alligator clips as shown in figure 8–14.

(4) Mount Jack UG–88/U on the other end of the cable as described in *a* above.

8–11. Alignment Procedure

a. Set the RECEIVER switch to ON and allow 15 minutes for the receiver to warm up. Remove the channel 1 receiver crystal and set the CHANNELS switch to 1. Use the dc voltmeter section of the multimeter to locate the cold side of CHANNEL 1 crystal socket.

b. Use the IF test cable to connect the signal generator through Adapter MX–1074/URM–25 to the cold side of the CHANNEL 1 crystal socket and chassis.

c. Connect the multimeter between the avc bus (junction of R13, R14, and R18 (fig. 8–1)) and chassis. Set the meter SELECTOR switch to – and the RANGE switch to 3 volts.

d. Set the RT unit panel controls as indicated below.

Control	Setting
VOLUME	Midposition
CONTROL	LOCAL
SQUELCH	OFF
TRANS. FIL.	OFF

e. Set the receiver IF GAIN control fully clockwise.

f. Adjust the signal generator frequency to 455 kc. Set the modulation to 30 percent at 400 cycles per second (cps).

g. Increase the output of the signal generator until the 400-cps tone is heard in the speaker and an indication is obtained on the multimeter.

h. Use a small nonmetallic screwdriver to adjust the tuning slugs at the top and bottom of IF transformer T5 (fig. 2–8) for a maximum indication on the multimeter. Reduce the signal generator output as necessary to maintain an avc voltage of –1 volt.

i. Use a nonmetallic hexagonal-type alignment tool to adjust the top and bottom tuning slugs of transformers T3 and T4 (fig. 2–8) for a maximum indication on the multimeter.

j. Repeat all adjustments for final peaking.

k. Disconnect the IF cable from the RT unit.

8–12. Rf Alignment Procedure

a. Replace the CHANNEL 1 cyrstal in the receiver.

b. Use the RF test cable to connect the signal generator between the RT unit antenna post and chassis. Adjust the frequency to the receiving frequency for CHANNEL 1. Set the modulation to 30 percent and 400 cps.

c. Increase the signal generator output until the 400-cps tone is heard in the speaker and an indication is obtained on the multimeter.

d. Use a small screwdriver to turn antenna trimmer capacitor C9 and RF trimmer capacitor C20 clockwise until just tight; back out (counterclockwise) 1/8 turn.

e. Use a recessed screwdriver-type alignment tool to adjust the tuning slugs of antenna transformer T1 (fig. 8–3) and RF transformer T2 for a maximum indication on the multimeter. Adjust the signal generator output as necessary to maintain an avc voltage –1 volt.

f. Set the RT unit CHANNELS switch to 2 and adjust the signal generator frequency to the receiving frequency for channel 2.

g. Turn antenna trimmer C10 and RF trimmer C21 clockwise until just tight; turn

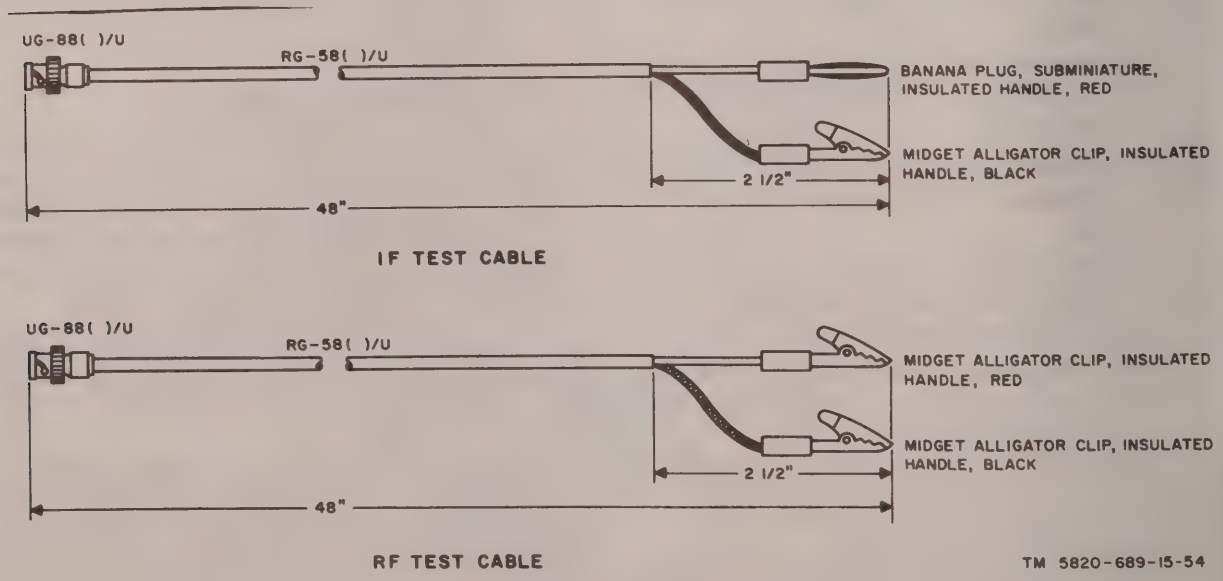


Figure 8–14. Fabricated IF and RF test cables.

counterclockwise until a maximum indication is obtained on the multimeter.

h. Complete the receiver RF alignment by adjusting trimmers C11 through C18 and C21 through C28; follow the procedures used to adjust C10 and C20.

8–13. Squelch Upper Threshold Adjustment

a. Set the RT unit CHANNELS switch to 1. Adjust the signal generator to the CHANNEL 1 receiving frequency at some low RF output level. Increase the output to 3,500 microvolts, modulated 30 percent at 400 cps.

b. Rotate the SQUELCH control fully clockwise.

c. Adjust the squelch upper threshold control to the point where the 400-cps tone begins to be heard in speaker.

d. Repeat the RF level adjustments given in *a* above to verify that squelch override occurs with 3,500 microvolt receiver input at maximum clockwise setting of SQUELCH control. Repeat *c* above if necessary.

e. Disconnect the test equipment from the RT unit.

8–14. Transmitter Alignment

a. Oscillator V14 of the transmitter is crystal-controlled and requires no tuning adjustments. Buffer amplifier V15 is a broadband amplifier designed to amplify RF voltages over the entire frequency band and requires no tuning.

b. The alignment of the transmitter power amplifier and the antenna tuning should be accomplished in accordance with the tuning procedure given in paragraph 2–20.

Section III. TESTING PROCEDURES

8–15. General

a. Testing procedures are prepared for use by Signal Field Maintenance Shops and Signal Service Organizations responsible for general support maintenance of electronics equipment to determine the acceptability of repaired electronic equipment. These procedures set forth the specific requirments that repaired electronic equipment *must* meet before it is returned to the using organization. These procedures may also be used as a guide for testing equipment that has been repaired at the direct support category if the proper tools and test equipments are available. A summary of the performance standards is given in paragraph 8–28.

b. Comply with the instructions proceeding each chart before proceeding to the chart. Perform each step in sequence. Do not vary the sequence. For each step, perform all the actions required in the *Control settings* columns; then perform each specific test procedure and verify it against its performance standard.

8–16. Test Equipment and Materials Required

All test equipment required to perform the testing procedures given in this section are listed in the following chart and are authorized under TA 11–17 and TA 11–100 (11–17).

a. Test Equipment.

Nomenclature	Federal stock No.	Technical manual
R.F. Signal Generator AN/URM–25D.	6625–649–5193	TM 11–5551D
Multimeter TS–352B/U	6625–553–0142	TM 11–6625–366–15
Frequency Meter AN/URM–79	6625–688–9749	TM 11–5094
Multimeter AN/URM–105	6625–581–2036	TM 11–6625–203–12
Multimeter ME–26C/U	6625–646–9409	TM 11–6625–200–12
Oscilloscope OS–8C/U	6625–643–1740	TM 11–1214A
Audio Oscillator TS–421A/U	6625–669–0228	TM 11–6625–355–12

Nomenclature	Federal stock No.	Technical manual
Test Set, Electron Tube TV–2C/U.	6625–699–0263	TM 11–6625–316–12
Test Set, Electron Tube TV–7D/U.	6625–820–0064	TM 11–6625–274–12

b. Tools.

Tool	Federal stock No.
Tool Kit, Radar and Radio Repairman TK–87/U.	5180–690–4552

c. Materials.

Amount	Material	Federal stock No.
2 each	Resistor, fixed comp., 10 ohms ±10%, 2W.	
1 each	Resistor, fixed comp., 180 ohms ±10%, 2W	5905–256–0411
1 each	Resistor, fixed noninductive, 10 ohm ±1%, 150W	
1 each	Capacitor, fixed, ceramic, 1000 pfd.	
1 each	Capacitor, fixed, paper, 10 μf.	
1 each	Capacitor, fixed, mica, 200 pf, 7,500W vdc.	
1 each	Specially fabricated IF cable.	
1 each	Specially fabricated RF cable.	

d. Other Equipment.

(1) Ammeter, RF 0–5 ampere, thermocouple type.

(2) Milliammeter, dc 0–50 milliamperes.

(3) Milliammeter, dc 0–500 milliamperes.

8–17. Test Facilities

Dc power sources of 24 and 110 volts capable of providing 52 amperes and 20 amperes, respectively, are required for testing Radio Sets AN/SRC–32 and AN/SRC–32X. An ac source capable of supplying 115 volts, 60 cps at 10 amperes is required for testing Radio Set AN/SRC–32Y. In addition, power sources of 300 volts dc and 32 volts ac (nominal) are required when testing Control, Remote Switching C–7270/SRC–32. Any of the power supplies used in the three models of the AN/SRC–32(*) will furnish these voltages.

8–18. Fabrication of Special Test Cables

Special cables are required to connect the output of the signal generator to the receiver. Fabrication of these cables is covered in paragraph 8–9 and shown in figure 8–14.

8–19. Modification Work Orders

The performance standards listed in the following tests are based on the assumption that all the applicable modification work orders pertaining to this equipment have been performed. A listing of current modification work orders will be found in DA Pam 310–7.

8–20. Physical Tests and Inspections

a. Test Equipment and Materials.

b. Test Connections and Conditions.

(1) No connections necessary.

(2) Remove cases before inspection.

c. Procedure.

Step No.	Test equipment	Control settings: Equipment under test	Test procedure	Performance standard
1	None	Controls may be in any position.	*a.* Inspect the cases and chassis of the RT unit, power supply, and RC unit for damage, missing parts, and condition of paint. *Note.* Touchup painting is recommended instead of refinishing whenever practical; screwheads, binding posts, receptacles, and other plated parts will not be painted or polished with abrasives.	*a.* No damage evident or parts missing. External surfaces intended to be painted will not show bare metal. All lettering will be legible.
			b. Inspect all controls and mechanical assemblies for loose or missing screws, bolts, and nuts.	*b.* Screws, bolts, and nuts will be tight. None will be missing.
			c. Inspect all connectors, sockets and receptacles, fuse holders, and meters for looseness, damage, or missing parts.	*c.* No loose parts or damage. No missing parts.
2	None	Controls may be in any position.	*a.* Rotate each panel control throughout its range of travel.	*a.* Controls will rotate freely without binding or excessive looseness.
			b. Operate all switches.	*b.* Switches will operate properly.

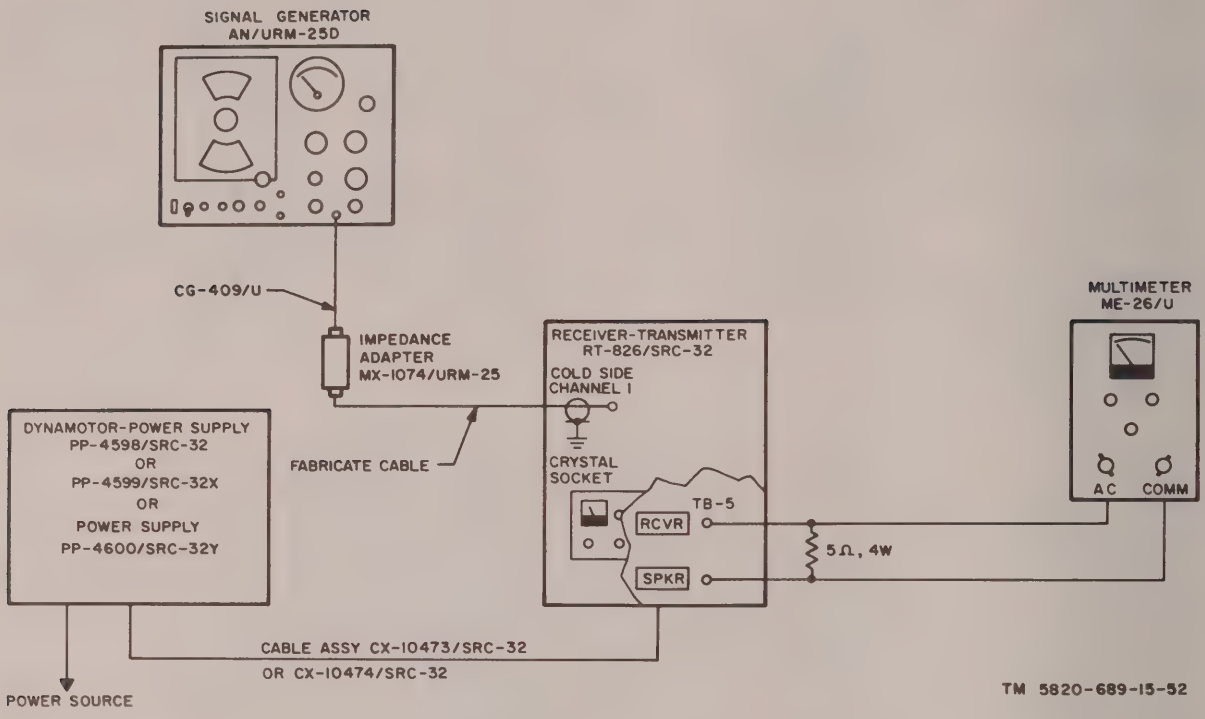


Figure 8–15. RTU, receiver IF and audio amplifier tests.

8–21. Receiver IF and Audio Amplifier Tests

a. Test Equipment and Materials. Signal Generator AN/URM–25D; Frequency Meter AN/URM–79; Multimeter ME–26C/U; resistor, 5-ohm, 4-w.

b. Test Connections and Conditions. Connect the equipment as shown in figure 8–15. Turn on all equipment and allow to warm up for 15 minutes.

c. Procedure.

Step No.	Test equipment	Control settings: Equipment under test	Test procedure	Performance standard
1	*AN/URM–25D* FREQ. BAND switch: D Main tuning dial: 455 kcs CARRIER CONT: Full ccw METER READS: RF MOD SELECTOR: OFF MICROVOLTS: Full cw MULTIPLIER: X1 CARRIER RANGE: DEFG % MODULATION: Full ccw *Multimeter ME–26C/U* RANGE: 3V SELECTOR: AC	VOLUME: Full cw CONTROL: LOCAL SQUELCH: OFF CHANNELS: 1 RECEIVER: ON TRANS. FIL: OFF	*a.* Adjust the AN/URM–25D CARRIER control until meter M101 indicates 100 on upper (RF) scale. *b.* Adjust the AN/URM–25D MICROVOLTS control for meter indication of 40 microvolts. *c.* Set the AN/URM–25D METER READS to % MOD, MOD SELECTOR switch to 400 cycles, and adjust the MODULATION control until meter indicates 30%.	*a.* None. *b.* None. *c.* None.
2	*AN/URM–25D and ME–26/U* Same as step 1*c*.	Same as step 1	*a.* Readjust the main tuning dial of the AN/URM–25D, *rocking* back and forth around 455 kc. Leave it set where the ME–26/U indicates maximum (peak) voltage. *b.* Reduce the AN/URM–25D output to zero.	*a.* The ME–26/U should indicate not less than 1.5 volts ac rms. *b.* The ME–26/U must indicate not more than .3 volt.

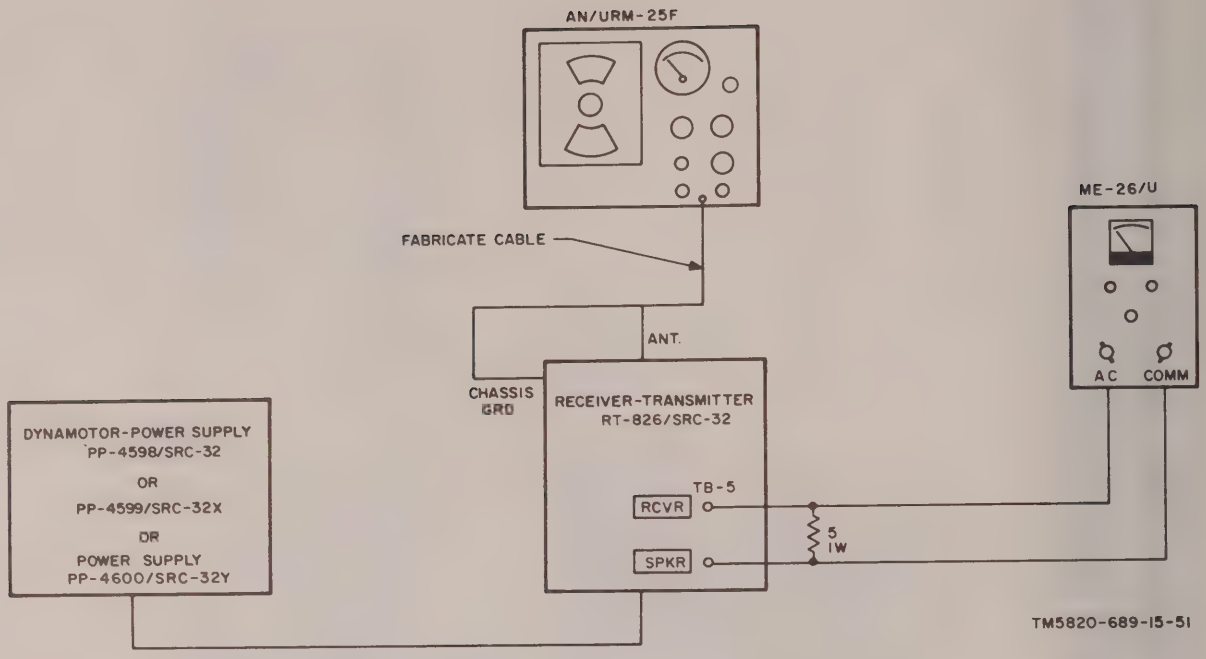


Figure 8-16. Receiver sensivity, S+N, ANL and squelch tests.

$\frac{}{N}$

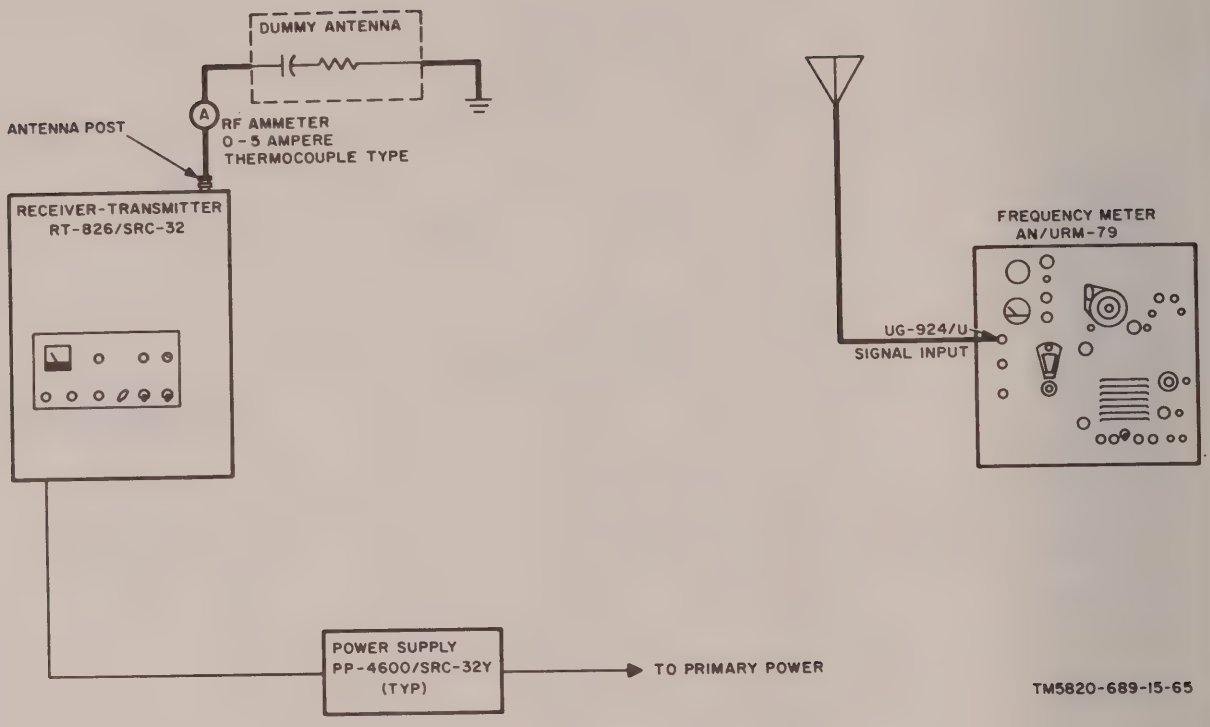


Figure 8–18. RTU, transmitter frequency measurements.

8–25. Transmitter Frequency Measurements

a. Test Equipment and Materials. Dummy antenna, O–5 RF ammeter, Frequency Meter AN/URM–79.

b. Test Connections and Conditions. Connect test equipment as shown in figure 8–18.

c. Procedure.

Step No.	Test equipment	Control settings: Equipment under test	Test procedure	Performance standard
1	*Frequency Meter AN/URM–79* POWER: ON FUNCTION SWITCH: Measure INTENSITY and FOCUS: As required BANDSWITCH: 4 TUNING and INPUT ATTEN: As required HARMONIC NO. selector switch: As required	VOLUME: OFF CONTROL: LOCAL SQUELCH: OFF CHANNELS: 1 RECEIVER: ON TRANS. FIL.: ON	*a.* Key the transmitter and obtain a single closed Lissajous pattern on the scope. *b.* Follow the instructions in the calibration book to determine frequency.	*a.* None. *b.* The indicated frequency should be within the tolerance range specified for selected CHANNELS crystal.
2	Same as step 1, except through change BAND SWITCH to 5 as required.	Repeat step 1, except advance the CHANNELS selector one position for each step.	Same as step 1*a* and *b* above	Same as step 1*a* and *b* above.

8–26. Dynamotor-Power Supply, 24 Volt dc, Voltage and Ripple Tests

a. Test Equipment and Materials. Multimeter TS–352B/U, Oscilloscope OS–8C/U.

b. Test Connections and Conditions. Make test equipment connections as directed in the *Test procedure* column. Turn on equipment and allow to warm up.

c. Procedure.

Step No.	Control settings: Test equipment	Control settings: Equipment under test	Test procedure	Performance standard
1	*TS–352B/U* Function switch: Ohms Range switch: RX1000	VOLUME: OFF CONTROL: LOCAL SQUELCH: OFF CHANNELS: 1 RECEIVER: OFF TRANS. FIL.: OFF	Measure the resistance between each input terminal and ground before connecting power supply to primary source.	The TS–352B/U must indicate more than 200K ohms for each measurement.
2	*TS–352B/U* Function switch: AC volts.	RECEIVER: ON TRANS. FIL.: ON	Connect the power supply to the primary power. Measure the voltage between pins 3 and 2 (GND) on TB2.	The TS–352B/U must indicate 34 volts ac ±3.4.
3	*Multimeter* Funtion switch: DIRECT.	Same as step 2	Measure the voltage between terminals 4 (+) and 1 (–) on TB2.	The TS–352B/U must indicate 250 volts dc ±12.5.
4	*OS–8C/U* VERT: AC input, amplitude as required. HORIZ: Normal sweep display.	Same as step 2.	Measure the ripple between terminals 4 and 1.	The ripple must be less than 1 volt peak-to-peak.
5	Multimeter	Same as step 2.	Measure the voltage between terminal 1 (+) and terminal 5 (–) on TB2, while varying the MOD BIAS control over its range.	The minimum range of adjustment must be –20 to –32 volts dc. Set to –30 volts.
6	Multimeter	Same as step 2.	Measure the voltage between terminals 6 (+) and 1 on TB2.	The TS–352B/U indication must be 620 volts dc ±31.
7	Multimeter	Same as step 2.	Measure the voltage between terminals 6M (+) and 1 on TB2.	The TS–352B/U must indicate 620 volts dc ±31.
8	*OS–8C/U:*	Same as step 2.	Key the transmitter and measure the ripple between terminals 6 and 1.	The ripple must be less than 3 volts peak-to-peak.
9	Same as step 4	Same as step 2.	Key the transmitter and measure the ripple between terminals 6M and 1.	The ripple must be less than 3 volts peak-to-peak.

8–27. Dynamotor-Power Supply, 110 volt Dc, Voltage and Ripple Tests

a. Test Equipment and Materials. Multimeter TS–352B/U; Oscilloscope OS–8C/U.

b. Test Connections and Conditions. Make test equipment connections as directed in the *Test procedure* column. Turn on

c. Procedure.

Step No.	Control settings: Test equipment	Equipment under test	Test procedure	Performance standard
1	*Multimeter TS–352B/U* Function switch: Ohms. Range switch: RX1000.	VOLUME: OFF CONTROL: LOCAL SQUELCH: OFF CHANNELS: 1 RECEIVER: OFF TRANS. FIL.: OFF	Measure the resistance between each input terminal and ground before connecting the power supply to the primary source.	The TS–352B/U must indicate more than 200K ohms for each measurement.
2	*Multimeter TS–352B/U* Function switch: AC VOLTS.	RECEIVER: ON TRANS. FIL.: ON	Connect the power supply to the primary power. Measure the voltage between pins 3 and 2 (GND) on TB2.	The TS–352B/U must indicate 32 volts ac ±3.2.
3	*Multimeter TS–352B/U* Function switch: DIRECT.	Same as step 2	Measure the voltage between terminals 4 (+) and 1 (–) on TB2.	The TS–352B/U must indicate 250 volts dc ±25.
4	*Oscilloscope OS–8C/U* VERT: Ac input. AMPL: As required. HORIZ: Normal sweep display.	Same as step 2	Measure the ripple between terminals 4 and 1.	The ripple must be less than 1 volt peak-to-peak.
5	*Multimeter TS–352B/U* Function switch: 20,000 ohms/volt DC REV.	Same as step 2	Measure the voltage between terminal 1 (+) and terminal 5 (–) on TB2, while varying the MOD BIAS control over its range.	The minimum range of adjustment must be –16 to –36 volts dc. Set to –30 volts.
6	*Multimeter TS–352B/U* Function switch: DIRECT.	Same as step 2	Measure the voltage between terminals 6 (+) and 1 on TB2.	The TS–352B/U indication must be 600 to 625 volts dc.
7	*TS–352B/U* Same as step 6.	Same as step 2	Measure the voltage between terminals 6M (+) and 1 on TB2.	The TS–352B/U must indicate 600 to 625 volts dc.
8	*Oscilloscope OS–8C/U*	Same as step 2	Key the transmitter and measure the ripple between terminals 6 and 1.	The ripple must be less than 3 volts peak-to-peak.
9	Same as step 4.	Same as step 2	Key the transmitter and measure the ripple between terminals	The ripple must be less than 3 volts peak-to-peak.

8-28. Power Supply, 115 Volt Ac, Voltage and Ripple Tests

a. Test Equipment and Materials. Multimeter TS-352B/U; Oscilloscope OS-8C/U.

b. Test Connections and Conditions. Make test equipment connections as directed in the *Test procedure* column. Turn on equipment and allow to warm up.

c. Procedure.

Step No.	Control settings: Test equipment	Control settings: Equipment under test	Test procedure	Performance standard
1	TS-352B/U Function switch: OHMS. Range switch: RX1000.	VOLUME: OFF CONTROL: LOCAL SQUELCH: OFF CHANNELS: 1 RECEIVER: OFF TRANS. FIL.: OFF	Measure the resistance between each input terminal and ground before connecting the power supply to a primary source.	The TS-352B/U must indicate more than 200K ohms for each measurement. The TS-352B/U must indicate 34 volts ac ±3.4.
2	*TS-352B/U* Function switch: AC VOLTS.	RECEIVER: ON TRANS. FIL.: ON	Connect power supply to a primary power. Measure the voltage between pins 3 and 2 (GND) on TB2.	
3	*TS-352B/U* Function switch: DIRECT.	Same as step 2	Measure the voltage between terminals 4 (+) and 1 (-) on TB2.	The TS-352B/U must indicate 280 volts dc ±28.
4	*OS-8/U* VERT: Ac input, amplitude as required HORIZ: Normal sweep display	Same as step 2	Measure the ripple between terminals 4 and 1.	The ripple must be less than 1 volt peak-to-peak.
5	*TS-352B/U* Function switch: 20,000 ohms/volt DC REV.	Same as step 2	Measure the voltage between terminal 1 (+) and terminal 5 (-) on TB2 while varying the MOD BIAS control over its range.	The minimum range of adjustment must be -16 to -36 volts dc. Set to -30 volts.
6	*TS-352B/U* Function switch: DIRECT.	Same as step 2	Measure the voltage between terminals 6 (+) and 1 on TB2.	The TS-352B/U indication must be 640 volts dc ±32.
7	*OS-8C/U* Same as step 4.	Same as step 2	Key the transmitter and measure the ripple between terminals 6 and 1.	The ripple must be less than 3 volts peak-to-peak.

8-29. Summary of Performance Standards

Personnel may find it convenient to arrange a checklist of test data similar to the performance standards shown below:

Receiver-Transmitter, Radio RT-826/SRC-32

Receiver IF and audio	The receiver must provide not less than 1.5 volt of audio across a 5-ohm load with not more than 40 microvolts input. The $\frac{S+N}{N}$ ratio must be 15 db or greater.
Receiver overall sensitivity.	The receiver must provide not less than 1.25 volt of audio across a 5-ohm resistor when not more than 2 microvolts input signal for each channel. The $\frac{S+N}{N}$ ratio must be 6 db or greater.
ANL	With full volume and zero signal input, the noise measured across 5-ohm load resistor must decrease 1 to 2 tenths of a volt when the automatic noise limiting is switched in.
Squelch	The signal levels required to override squelch should be as follows: Minimum squelch setting: 3 microvolts; maximum squelch setting: 3,500 microvolts.
Transmitter power input	The final amplifier plate current should be 400 milliamperes ±40 when the transmitter is properly tuned and loaded.
Transmitter power output.	The transmitter must be capable of delivering 99 watts of RF power into a 10-ohm, 200-pf dummy antenna when properly tuned and loaded. The antenna current should be not less than 3.15 amperes.

Dynamotor-Power Supply PP-4598/SRC-32

Voltages	The unit must deliver following voltages under normal load:		
	Receiver	B+:	250 vdc ±12.5
	Filament	:	34 v rms ±3.4
	Transmitter	B+:	620 vdc ±31
	Modulator	B+:	620 vdc ±31
	Modulator	Bias:	-30 vdc
Ripple	The ripple must not exceed the following levels:		
	Receiver	B+:	1 volt pp
	Transmitter	B+:	3 volts pp
	Modulator	B+:	3 volts pp

Dynamotor-Power Supply PP-4599/SRC-32X

Voltages	The unit deliver following voltages under normal load:		
	Receiver	B+:	250 vdc ±25
	Filament	:	32 v rms ±3.2
	Transmitter	B+:	600 to 625 vdc
	Modulator	B+:	600 to 625 vdc
	Modulator	Bias:	-30 vdc
Ripple	The ripple must not exceed the following levels:		
	Receiver	B+:	1 volt pp
	Transmitter	B+:	3 volts pp
	Modulator	B+:	3 volts pp

Power Supply PP-4600/SRC-32Y

Voltages	The unit must deliver following voltages under normal load:		
	Receiver	B+:	280 vdc ±28
	Filament	:	34 v rms ±3.4
	Transmitter	B+:	640 vdc ±32
	Modulator	Bias:	-30 vdc

Ripple	The ripple must not exceed the following levels:	
	Receiver B+:	1 volt pp
	Transmitter B+:	3 volts pp

Section IV. AUXILIARY EQUIPMENT MAINTENANCE, DS AND GS

8–30. General

Direct support and general support, maintenance of Control, Remote Switching C–7270/SRC–32, auxiliary to Radio Set AN/SRC–32(*), is described in the following paragraphs. Troubleshooting, repair, and replacement procedures will be performed on two subassemblies: on the remote control console (console) and on the remote drive assembly. Checkout procedures will be indicated. These procedures supplement the organizational maintenance procedures of chapter 7.

8–31. Tools, Test Equipment, and Test Facilities Required

a. Tools. No special tools are required.

b. Test Equipment. Multimeter TS–352B/U.

c. Test Facilities. The following test facilities are required.

(1) Any available power source of +300 volts dc ±30 capable of supplying 20 milliamperes (ma) minimum.

(2) Any available source of 32 volts ac ±3.2 capable of supplying 5 amperes minimum.

8–32. Troubleshooting RC Unit

a. Use Multimeter TS–352B/U, the RC unit schematic diagram (fig. 7–8), and component illustrations (figs. 7–2, 7–3, and 7–4), make the measurements listed in *c* through *k* below to isolate the fault.

b. Set controls as follows:

(1) SPEAKER–HANDSET to HANDSET.

(2) VOLUME to OFF.

(3) SQUELCH–OFF to OFF.

(4) Channel selector to 0.

c. Measure the resistance between the following terminals with the TS–352B/U. The TS–352B/U should indicate continuity.

(1) TB1–B and TB2–B.

(2) TB1–R and TB2–R.

(3) TB1–G and TB2–G.

(4) TB1–RS and TB2–W.

d. Measure the resistance between the following terminals. The TS–352B/U should indicate an open circuit.

(1) TB1–R and TB1–B.

(2) TB1–G and TB1–B.

e. Measure the resistance between terminals TB2–S and TB2–B. The TS–352B/U should indicate continuity. Set SQUELCH–OFF switch to SQUELCH. The TS–352B/U should indicate an open circuit.

f. Measure the resistance between TB2–W and TB2–B while varying the VOLUME control over its range. The TS–352B/U indication should vary from approximately 3 ohms to approximately 20 ohms.

g. Measure the resistance between terminals TB1–W and TB2–W while varying the VOLUME control over its range. The TS–352B/U indication should vary from 0 to approximately 7 ohms. Set the SPEAKER–HANDSET switch to SPEAKER. The TS–352B/U should indicate an open circuit.

h. Measure the resistance of R2 and R3. The TS–352B/U should indicate 100K ohms ±20K.

i. Connect +300 volts dc between TB2–B (–) and TB1–P (+). The RECEIVER lamp should illuminate.

j. Connect +300 volts dc between TB2–B (–) and TB2–T (+). The TRANS. lamp should illuminate.

k. Evaluate the performance of loudspeaker LS1 by connecting to a 4–ohm (nominal) source of audio power of approximately 2 watts. The loudspeaker should reproduce audio-frequencies between 200 cycles and 3,000 cycles without significant distortion.

Note. Set S3 to HANDSET for the loudspeaker test.

l. Use conventional electronic equipment repair techniques to repair or replace a faulty component, wire, or solder joint.

8–33. Troubleshooting Remote Drive Assembly
(figs. 8–19), 7–8, 8–20, and 8–21)

a. Make the following resistance measurements on the remote drive assembly:

(1) K1–1–1 to K1–1–2 (coil) _____ 9.75K ohms ±5%.
Note. Observe polarity; CR5–1 will affect reading.

(2) Across R1–1 ____ 5.6K ohms ±10%.

(3) Motor leads (1 and 2) __5 ohms ±10%.

b. Perform the following voltage test on the remote drive assembly.

(1) Jumper the Ledex motor case to common power return and connect conductors 2, 3, and K to the two power sources as follows:
K to +300-volt dc source.
2 to common.
3 to 32-volt ac source.

(2) Block open Ledex interrupter contacts 3 and 4 by inserting a slip of paper between them.

(3) Depress the armature of K1–1 to hold the contacts closed only long enough to measure the dc voltage across the posts holding C1–1. It should be 23 volts nominal with a 32-volt nominal source.

(*a*) A faulty rectifier (CR1–1 through CR4–1) will cause a lower voltage indication.

(*b*) An open circuit in the Ledex motor winding or lead wires will result in an excessive voltage indication (approximately 50 volts dc).

(*c*) An open Ledex circuit and open capacitor C1–1 will result in a dc indication of approximately 30 volts.

(4) Remove the paper block from the interrupter contacts.

Warning: **Use caution in making the following test; +300 volts dc is present in the circuits to be jumpered. If the proper type of insulated probe is not available, make provision to turn +300-volt power off while making jumper connections.**

c. Perform the following functional test on the remote drive assembly:

(1) Use a test lead jumper or piece of solid wire of proper size and insert one end into pin socket 12 of chassis connector J1–1.

(2) Insert the other end of the jumper into each of the other pin sockets 1 through 11.

(3) The Ledex motor should *step* around until the slave switch section (S1–1) is positioned with the opening at the corresponding wafer terminal lug position.

d. In addition to the referenced illustrations, the following chart is furnished to aid in locating Ledex circuits and switch positions in troubleshooting and checkout:

Pin number	Remote drive chassis connector J1–1 Wire color—	Ledex slave wafer (S1–1). Rotor opening position identified by contact terminal lug wire color.
1	Brown	Brown
2	Red	Red
3	Orange	Orange
4	Yellow	Yellow
5	Green	Green
6	Blue	Blue
7	Violet	Violet
8	Gray	Gray
9	White	White
10	Black	Black
11	White/Green	White/Green
12	White/Purple	Wire "K" (not on wafer)

Note. A gray wire connects interrupter contact (motor 4) to the rotor terminal of S1–1. A white/orange wire connects the other interrupter contact (motor 3) to K1–1–1.

e. Repair, replace, clean, or adjust as indicated by visual examination and/or analysis of test results where different from normal continuity or functional responses.

8–34. Checkout of RC Unit

a. After repairs, the RC unit and remote drive assembly must be checked before return to service or stock.

b. Perform the troubleshooting steps given in paragraph 8–32 and/or 8–33. Normal response to the tests will indicate combat serviceability.

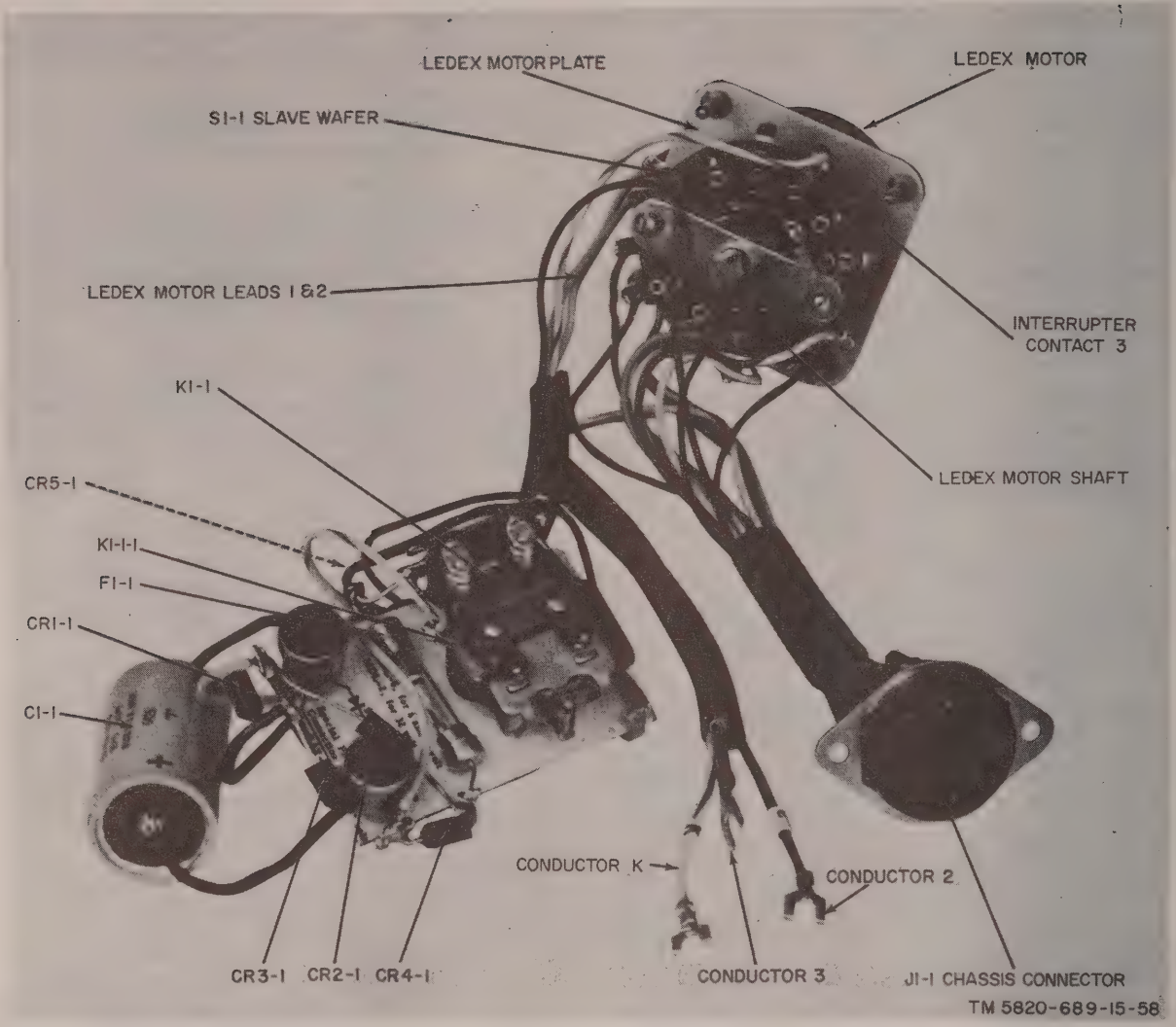


Figure 8–19. Components, remote drive assembly.

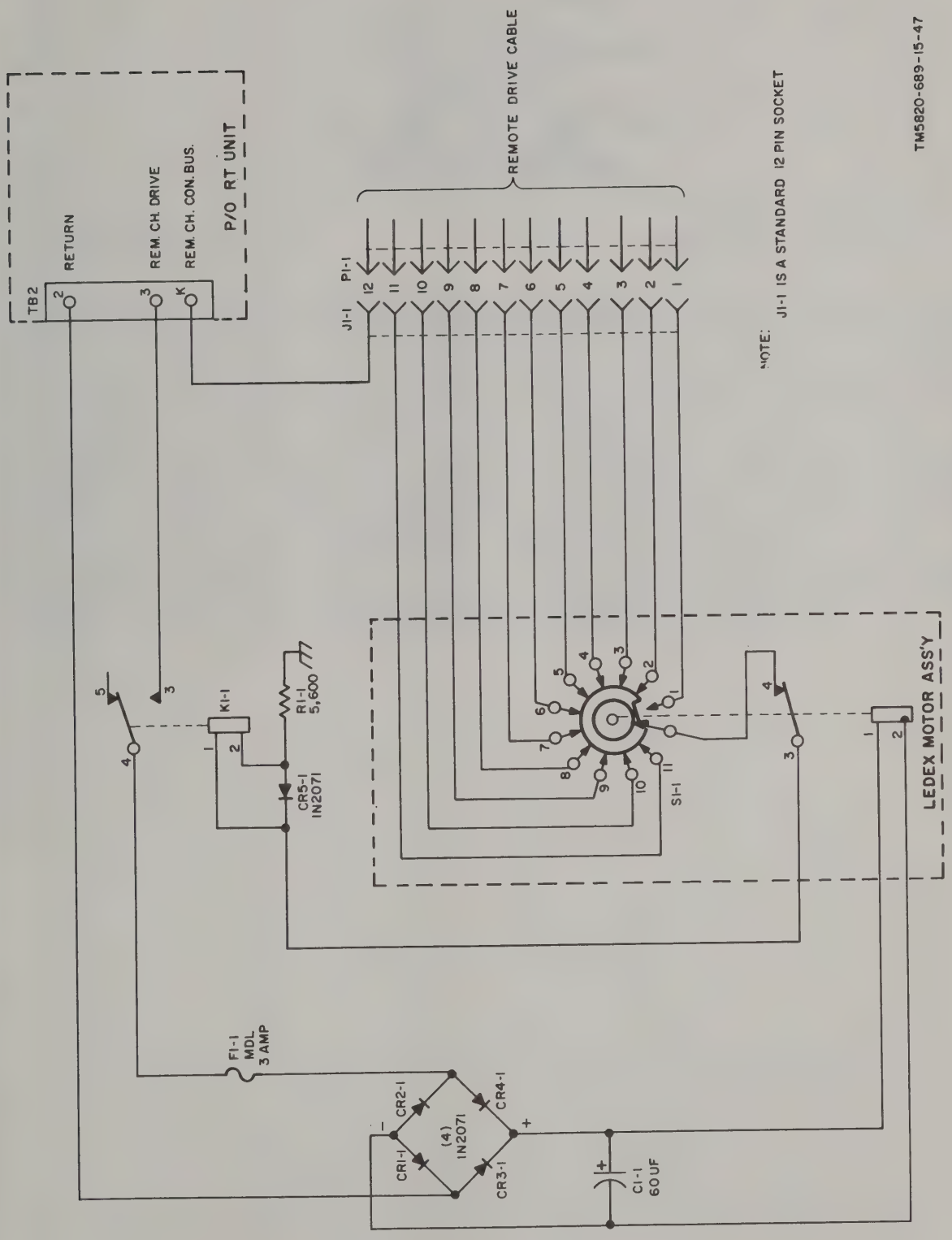
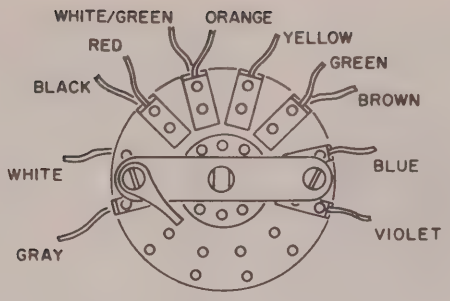


Figure 8-20. Remote drive assembly, schematic diagram.



CHANNEL NO.	WIRE COLOR
1	BROWN
2	RED
3	ORANGE
4	YELLOW
5	GREEN
6	BLUE
7	VIOLET
8	GRAY
9	WHITE
10	BLACK
0	WHITE/GREEN

TM5820-689-15-48

Figure 8-21. Ledex motor wiring.

CHAPTER 9

DEPOT MAINTENANCE

9–1. Depot Rebuild Operations

Complete rebuild of Radio Sets AN/SRC–32, AN/SRC–32X, and AN/SRC–32Y, and Remote Switching Control C–7270/SRC–32 and their components may be accomplished by depot maintenance facilities when authorized. Rebuild action will include all repairs, rebuild, and replacement operations necessary to make the equipment suitable for return to DA supply system stocks for reissue to using organizations as equipment equivalent to new material. Detailed procedures for accomplishing the repairs and adjustments established in the preceding portions of this manual and such additional repair or rebuild operations as deemed necessary will be established by the facility performing the work.

9–2. General Parts Replacement Techniques

Before removing a part in the radio sets or remote control unit, note the position of the part and its leads or assemblies. Install replacement parts in the same position as the original parts. In the case of electronic parts, this practice will avoid undesired coupling, spurious oscillations, and decrease in gain. In the case of mechanical parts, this practice will insure proper mechanical operation and prevent damage to the mechanical portion of this equipment. For replacement of parts, refer to paragraphs 7–21 and 8–7.

CHAPTER 10
DEPOT OVERHAUL STANDARDS

10-1. Applicability of Depot Overhaul Standards

The tests outlined in this chapter are designed to measure the performance capability of a repaired equipment. Equipment that is to be returned to stock should meet the standards given in these tests.

10-2. Applicable References

a. Repair Standards. Applicable procedures of the depots performing these tests and the general standards for repaired electronic equipment given in TB SIG 355-1, TB SIG 355-2, and TB SIG 355-3 form a part of the requirements for testing this equipment.

b. Modification Work Orders. Perform all modification work orders applicable to this equipment before making the tests specified. DA Pam 310-7 lists all available MWO's.

10-3. Test Facilities Required

The following equipments, or suitable equivalents, will be used to determine compliance with the requirements of this specific standard.

a. Test Equipment.

Item	Technical manual	Common name
R.F. Signal Generator AN/URM-25D.	TM 11-551D	Signal generator.
Frequency Meter AN/URM-79.	TM 11-5094	Frequency meter.
Multimeter AN/URM-105	TM 11-6625-203-12	Multimeter.
Multimeter ME-26C/U	TM 11-6625-200-12	Vacuum tube voltmeter (vtvm).
Oscilloscope OS-8C/U	TM 11-1214A	Oscilloscope.
Multimeter TS-352B/U	TM 11-6625-366-15	Multimeter.
Audio Oscillator TS-421A/U	TM 11-6625-355-12	Audio oscillator.
Test Set, Electron Tube TV-2C/U	TM 11-6625-316-12	Tube tester.
Test Set, Electron Tube TV-7D/U	TM 11-6625-274-12	Tube tester.

b. Additional Equipment.

Item	Common name
Ammeter, RF, 0-5 ampere, thermocouple type.	RF ammeter.
Milliammeter, dc, 0-50 milliamperes.	Dc milliammeter.
Milliammeter, dc, 0-o00 milliamperes.	Dc milliammeter.
Tool Kit, Radar and Radio Repairman TK-87/U.	Toolkit.
Antenna, dummy (200 pf, 7,500 vdc capacitor in series with 10-ohm, 150-watt noninductive resistor).	Dummy antenna.
Resistor, 5-ohm, 4-watt ±5%, noninductive.	5-ohm resistor.
Resistor, 180-ohm, 2-watt ±10%	180-ohm resistor.
Capacitor, 1,000-pf, mica or ceramic.	
Capacitor, 10-μf, paper	
Fabricated cable, interconnects signal generator and IF amplifier input. (See fig. 8-14 for cable fabrication.)	IF test cable.
Fabricated cable, interconnects signal generator and RT unit antenna post. (See fig. 8-14 for cable fabrication.)	RF test cable.

10-4. General Test Requirements, Radio Set AN/SRC-32(*)

Tests of Radio Set AN/SRC-32(*) will be performed with the RT unit and power supply connected as shown in figure 2-5. The input of the power supply should be connected to the proper primary power source. Input power requirements for different power supply models are listed below.

Model	Input voltage	Input current
Dynamotor-Power Supply PP-4598/SRC-32.	24 vdc	50 amperes
Dynamotor-Power Supply PP-4599/SRC-32X.	110 vdc	10 amperes
Power Supply PP-4600/SRC-32Y.	115 vac	20 amperes

10-5. Receiver-Transmitter, Radio, RT-826/SRC-32, Receiver IF and Audio Amplifier Tests (fig. 8-15)

a. Set RT unit controls as follows:
(1) VOLUME to OFF.
(2) CONTROL to LOCAL.
(3) SQUELCH to OFF.
(4) CHANNELS to 1.
(5) RECEIVER to ON.
(6) TRANS. FIL. to ON.

b. Before connecting the RT unit to the power supply, measure the resistance from each terminal of TB1 of the unit to chassis ground. Measurements are to be made with the TS-352B/U and should be as indicated below. Values marked with an asterisk are typical, and actual readings on a good unit may vary by ±10 percent; terminals 2, 3, 5, 7, 8, 9, and 10 may read infinity.

Terminal No.	Resistance	Terminal No.	Resistance
1	0	6M[a]	*32K ohms
2	1 megohm	7	1 megohm
3	1 megohm	8	1 megohm
4	* 30K ohms	9	1 megohm
5	1 megohm	10	1 megohm
6	*360K ohms		

[a] Terminal 6M is located adjacent to TB1.

c. Set RECEIVER and TRANS. FIL. switches to OFF, and connect the receiver-transmitter to the power supply. Connect the input of the power supply to the proper voltage source. Interconnect RT unit and test equipment (fig. 8-15).

d. Disconnect the speaker leads at TB5 and connect the 5-ohm, 4-watt resistor between the terminals from which the speaker leads were removed.

e. Connect the ME-26/U vacuum tube voltmeter across the 5-ohm resistor. Adjust the meter to the 3-volt ac range.

f. Connect the AN/URM-25D to the cold side of the crystal socket for channel 1.

g. Turn on the AN/URM-25D and ME-26C/U. Allow the equipment to warm up for 15 minutes.

h. Set the RT unit RECEIVER switch to ON and adjust the VOLUME control fully clockwise. Allow the receiver to warm up for 15 minutes.

i. Adjust the AN/URM-25D frequency to 455 kcs. Set the output level to 40 microvolts and adjust for 30-percent modulation at 400 cps. Vary the AN/URM-25D frequency slightly in each direction until a peak indication is obtained on the vtvm.

j. The ME-26/U should indicate not less than 1.5 volt with not more than 40 microvolts input $\frac{S+N}{N}$ ratio must be 15 db or greater.

k. Remove the modulation from the AN/URM-25D output and observe the ME-26/U. The indication should be not more than .3 volt.

10-6. Receiver-Transmitter, Radio RT-826/SRC-32, Receiver Sensitivity, and $\frac{S+N}{N}$ Ratio Tests (fig. 8-16)

a. Disconnect the AN/URM-26D from the test point and connect to the antenna post of the RT unit (fig. 8-16).

b. Install receiver crystals for channels 1, 5, and 10. These channels correspond to operating frequencies of 2079, 2392, and 3107 kcs respectively.

c. Set the channel selector switch to channel 1. Adjust the AN/URM-25D frequency to 2,079 kcs, 30-percent modulated at 400 cps, and set the output level for an indication of 1.25 volt on the ME-26/U. The AN/URM-25D output should be not more than 1 microvolts. The $\frac{S+N}{N}$ ratio must be 6 db or greater. Reduce the AN/URM-25D output to 0. The ME-26/U indication should be not more than .625 volt.

d. Repeat the procedure given in *c* above for channels 2 through 10; set the AN/URM-25D to the operating frequency for each channel as shown in the chart. The meter indications should be as given in *c* above.

Note. If unable to obtain the proper results for the tests given in paragraphs 10-5 and 10-6, align the receiver in accordance with the instructions given in paragraphs 2-18 and 2-19 and repeat the tests.

10-7. Receiver-Transmitter, Radio RT-826/SRC-32, RF Amplifier Alignment

a. Move the AN/URM-25D connection to the antenna post and replace the channel 1 crystal. Set the AN/URM-25D frequency to 2,079 kcs, 30-percent modulated at 400 cps. Adjust the output level to provide a ME-26/U indication of approximately 1 volt.

b. Turn the antenna and RF trimmers for channel 1 clockwise until just tight, and then turn out (counterclockwise) one-eighth turn. Adjust the tuning slugs of T1 and T2 for a maximum indication on the ME-26/U, reducing the AN/URM-25D output level as necessary to maintain the ME-26/U indication of 1 volt.

c. Set the RT unit channel selector switch to 2 and adjust the AN/URM-25D frequency to 2,092 kcs, and the output level for a 1-volt indication on the ME-26/U. Turn the antenna and RF trimmers for channel 2 clockwise until just tight, and then turn out until the ME-26/U indicates a maximum. Two peaks can be observed; the correct setting is the first peak from the maximum clockwise position of the trimmers.

d. Repeat the procedure given in *c* above for channels 3 through 10; set the AN/URM-25 to the operating frequency of each channel shown in the chart given in paragraph 10-6.

10-8. Receiver-Transmitter, Radio RT-826/SRC-32, ANL and Squelch Tests (fig. 8-18)

a. Return the CHANNELS switch to position 1 and adjust the AN/URM-25D for an output of 3 microvolts at 2,079 kcs, 30-percent modulated at 400 cps. Rotate the SQUELCH control clockwise until the ANL switch just opens. The indication on the ME-26 vtvm should decrease 1/10 or 2/10 of a volt at this point.

b. Turn the receiver off, set the VOLUME control to the minimum (counterclockwise) position, and remove the 5-ohm load resistor from the speaker terminals. Reconnect the speaker leads and adjust the VOLUME control for normal listening level after turning receiver on.

c. Set the AN/URM-25 output to 0. Adjust the SQUELCH control clockwise until the speaker noise just disappears. Increase the AN/URM-25 output until a signal is heard in the speaker, indicating squelch override. The AN/URM-25 output should be not more than 3 microvolts.

d. Adjust the SQUELCH control maximum clockwise. Increase the AN/URM-25 output until a signal is again heard in the speaker. The AN/URM-25 output should be not more than 3,500 microvolts.

e. Set the RECEIVER switch to OFF and disconnect all test equipment.

10-9. Receiver-Transmitter, Radio RT-826/SRC-32, Transmitter Alignment Test

a. Set the RT unit controls as follows:
(1) VOLUME to OFF.
(2) CONTROL to LOCAL.
(3) SQUELCH to OFF.
(4) CHANNELS to 1.
(5) RECEIVER to OFF.
(6) TRANS. FIL. to OFF.

b. Connect the 0–50 milliampere dc meter to J2, FINAL GRID jack. Connect the 0–500 milliampere dc meter to J4, MOD PLATE jack. Connect handset to TB4. Insert the plug for the RT unit panel meter into FINAL PLATE jack J3.

c. Install transmitter crystals for channels 1, 5, and 10. These channels correspond to operating frequencies of 2079 kcs, 2392 kcs, and 3107 kcs respectively.

d. Jumper all terminals on push-to-talk interlock circuit terminal boards TB6 and TB7. Make sure that the interlock return lead is also attached to one of the jumpered terminals (para 2–18 and fig. 2–9).

e. Assure that terminals D and 10 on terminal board TB8 are jumpered.

f. Connect the lugged leads of bandswitch S1 section M to TB9. The leads for channels 1 through 9 should be connected to terminals D, E, and H and these terminals jumpered together. The lead for channel 10 should be connected to terminal B.

g. Connect the leads from bandswitch S1 sections J and K to the final amplifier plate coil in accordance with the chart below. The number of turns indicated in the chart are counted from the plate end of the coil. Set plate tuning capacitors for each channel to half mesh.

Channel	Wire color	Number of turns
1	Brown	25
2	Red	25
3	Orange	23
4	Yellow	21
5	Green	20
6	Blue	17
7	Violet	16
8	Gray	16
9	White	16
10	Black	17

h. Set the RECEIVER and TRANS. FIL. switches to ON. Both pilot lamps on the RT unit should light. Allow 1 minute for the transmitter to warm up.

i. Press the handset button to key the transmitter, and observe the MOD PLATE meter indication. If necessary, adjust the bias adjustment on the power supply for an indication of 150 ma. Release the button.

j. Key the transmitter and adjust channel 1 plate tuning capacitor C101 for a minimum current indication (dip) on the RT unit panel meter (approximately 110 to 125 ma). The FINAL GRID meter indication should be not less than 18 ma. Release the handset button.

k. If the tuning capacitor setting is more than 30° from half mesh at minimum plate current indication, readjust the plate coil tap until the capacitor setting falls within the required range of rotation (±30° from half mesh).

l. Repeat the procedure given in *j* and *k* above for channels 2 through 9; adjust for dip with tuning capacitors C102 through C109 in succession. Meter indications should be within the tolerances given in *j* above.

m. Set the channel selector switch to channel 10. Key the transmitter and adjust L5 for a maximum indication on the 0–50 milliampere meter. Tune C110 for a minimum indication on the panel meter. Readjust the tank coil tap if necessary to meet the requirements given in *k* above.

10–10. Receiver-Transmitter, Radio RT–826/SRC–32, Transmitter Loading Tests

a. Connect the dummy antenna and RF ammeter in series between the antenna terminal and chassis ground of the RT unit as shown in figure 8–17.

b. Set the channel selector switch to channel 1. Key the transmitter and adjust the channel 1 antenna coil clip back and forth along the antenna coil to obtain maximum indication on the RF ammeter.

c. If the RT unit panel meter does not indicate 400 ma ±40, when a peak antenna current indication is obtained, change the antenna load capacity from the value used during setup by

removing the lugged wire corresponding to channel 1 and/or jumpering terminals on TB9.

d. If a change in load capacity is made, disconnect the dummy antenna and readjust the final plate tank tuning capacitor for a minimum indication on the RT unit panel meter.

e. Reconnect the dummy antenna and recheck loading.

f. Repeat the procedures given in *b* through *e* above for channels 2 through 10. The cathode panel meter indication should be 400 ma ±40 for all channels.

g. With the transmitter adjusted for the 400-ma current, the RF ammeter should indicate not less than 3.15 amperes. (The transmitter high voltage supply input(s) should be not less than 600 volts dc for this test.)

h. Set the RECEIVER and TRANS. FIL. switches to OFF.

10–11. Receiver-Transmitter, Radio RT–826/SRC–32, Transmitter Modulation Tests (fig. 8–17)

Note. Transmitter alignment must be completed before modulation tests are performed. Interconnect equipment as shown in figure 8–17.

a. Couple part of the output of the transmitter to the vertical deflection plates of the OS–8C/U with a pickup coil. Wind several turns of insulated wire around the dummy antenna lead and connect this coil to the oscilloscope with a length of twisted pair line.

b. Connect the 180-ohm, 2-watt resistor between pin 8 of V8 and ground.

c. Remove the red microphone input lead from terminal R of TB4. Connect the 1,000-pf capacitor between terminals R and B on TB4. Connect one terminal of the 10-μf capacitor to terminal R.

d. Connect the output of the TS–421A/U to the free terminal of the 10-μf capacitor; use a shielded lead. Connect the shield to terminal B of TB4.

e. Set the TS–421A/U FREQUENCY RANGE to X10 and adjust the frequency dial to 100. Set the IMPEDANCE control to 50 and adjust the output controls for minimum output.

f. Connect the ME–26/U across the output terminals of the audio oscillator. Set the ME–26/U SELECTOR switch to AC and the RANGE switch to 1.

g. Connect the high side of the TS–421A/U output to the EXT SYNC terminal of the OS–8C/U. Set SYNC SELECTOR to EXT.

h. Turn on all test equipment and allow to warm up for 15 minutes.

i. Set the RECEIVER and TRANS. FIL. switches on the RT unit to ON and allow the unit to warm up.

***Caution:* Do not key the transmitter for periods in excess of 1 minute while making the following adjustments and measurements.**

j. Key the transmitter and adjust the OS–8C/U controls to obtain a display of the unmodulated carrier waveform.

k. Adjust the pickup coil turns or position for a carrier height display of approximately one-half of the OS–8C/U screen.

l. With the transmitter keyed, increase the output of the TS–421A/U until an amplitude-modulated waveform is displayed on the OS–8C/U. Adjust the OS–8C/U SYNC AMPLITUDE, SWEEP, and X GAIN controls to obtain 2 cycles of modulated waveform on the screen.

m. Adjust the TS–421A/U output level to produce a 80 percent modulated waveform with the transmitter keyed. Multimeter ME–26/U should indicate an audio oscillator output of between .35 and .45 volt ac rms.

Note. Modulation percentage is equal to $\frac{A-B}{A+B} \times 100$ where A = maximum height of oscilloscope pattern.
B = minimum height of oscilloscope pattern.

n Be sure the IF ammeter indicates a significant increase in antenna current when the modulation signal is applied to the keyed transmitter.

o. Set the RECEIVER and TRANS. FIL. switches to OFF and disconnect all test equipment.

10–12. Transmitter Frequency Measurements

To perform transmitter frequency measurements, set up equipment as shown in figure 8–18 and proceed as follows:

a. Set RT unit controls to positions given in paragraph 10–10.

b. Insert Adapter Connector UG–924/U into the SIGNAL INPUT jack of the AN/URM–79, and connect a short length of unshielded wire to the adapter for use as an antenna.

c. Place RT unit RECEIVER and TRANS. FIL. switches to ON and turn on frequency meter. Allow equipment to warm up for 20 minutes.

d. Measure the frequency of each channel with the transmitter keyed. The AN/URM–79 indication should be within the specified tolerance range of each installed crystal.

Note. For the following power supply test, RT unit and power supply should be interconnected as shown in figure 2–5.

10–13. Dynamotor-Power Supply, PP–4598/SRC–32, Voltage and Ripple Tests

a. Measure the resistance between each input terminal and the power supply chassis with the TS–352B/U. The resistance must be greater than 200,000 ohms for each terminal.

b. Connect the power supply output to an RT–826/SRC–32 known to be in proper operating condition. Set the RT unit controls as follows:

(1) VOLUME to OFF.
(2) CONTROL to LOCAL.
(3) SQUELCH to OFF.
(4) CHANNELS to 1.
(5) RECEIVER to OFF.
(6) TRANS. FIL. to OFF.

c. Connect the power supply input to a 24-volt dc source capable of delivering 50 amperes continuous.

d. Set the RECEIVER switch to ON and see that relay K1 closes and that MG1 runs.

e. Measure the voltage between terminals 3 and 2 (GND) on terminal board TB2 in the power supply; use the TS–352B/U. The TS–352B/U must indicate 32 volts ac ±3.2

f. Measure the dc voltage between terminals 4 (+) and (–) on TB2. The TS–352B/U must indicate 250 volts dc ± 25v.

g. Connect the OS–8C/U to measure the ripple between terminals 4 and 1. The ripple must be less than 1 volt peak-to-peak.

h. Measure the dc voltage between terminals 1 (+) and 5 (–) on TB2. Vary modulator bias control R3 over its range and observe that the TS–352B/U indication varies over a minimum range of –20 to –32 volts dc. Set the bias control for –30 volts dc.

***Warning:* Observe caution when performing the following tests of final amplifier and modulator high voltages. Dangerous voltages exist at the high voltage terminals of TB2 when the handset button is pressed.**

i. Connect the dummy antenna between the antenna post and chassis ground on the RT unit. Set the TRANS. FIL. switch to ON and allow 45 seconds for the transmitter filaments to warm up.

j. Key the transmitter and measure the voltage between terminals 6(+) and 1(–) on TB2. The TS–352B/U indication must be 620 volts dc ±31. Key the transmitter and measure the ripple with the OS–8C/U. The ripple must be less than 3 volts peak to peak.

k. Measure the voltage between terminals 1 (–) on TB2 and 6M (+) with handset button again pressed. The TS–352B/U indication must be 620 volts dc ±31. Measure the ripple with the OS–8C/U. The ripple must be less than 3 volts peak-to-peak.

10–14. Dynamotor-Power Supply PP–4599/SRC–32X, Voltage and Ripple Tests

a. Measure the resistance between each input terminal and the power supply chassis; use the TS–352B/U. The resistance must be greater than 200,000 ohms for each measurement.

b. Connect the power supply output to an RT–826/SRC–32 known to be in good operating condition. Connect the dummy antenna to the RT unit and set the operating controls as follows:

(1) VOLUME to OFF.
(2) CONTROL to LOCAL.
(3) SQUELCH to OFF.
(4) CHANNELS to 1.
(5) RECEIVER to OFF.
(6) TRANS. FIL. to OFF.

c. Connect the power supply input to a 110-volt dc source capable of delivering 10 amperes. The positive input lead must be connected to the plus terminal.

d. Set the RT unit RECEIVER switch to ON and observe that relay K1 closes and that MG1 runs.

e. Using the TS–352B/U, measure the voltage between terminals 3 and 2 (GND) on terminal board TB2 in the power supply. The TS–352B/U indication must be 32 volts ac ±3.2.

f. Measure the dc voltage between terminals 4 (+) and 1 (–) on TB2. The TS–352B/U indication must be 250 volts dc ±25.

g. Connect the OS–8C/U to measure the ripple between terminals 4 and 1. The ripple must be less than 1 volt peak-to-peak.

h. Measure the dc voltage between terminals 1 (+) and 5 (–) on TB2. Vary modulator bias control R3 over its range and observe that the TS–352B/U indication varies from –16 to –36 volts dc ±10 percent. Set the bias control for –30 volts dc.

***Warning:* Observe caution when performing the following tests of modulator and final amplifier high voltages. Dangerous voltages exist at the high voltage terminals of TB2 when the handset button is pressed.**

i. Set the TRANS. FIL. switch to ON and allow 45 seconds for the transmitter filaments to warm up. Key the transmitter and measure the voltage between terminals 6 (+) and 1 (–) on TB2. The TS–352B/U must indicate **+620 ± 31 volts dc** Release the button.

j. Measure the voltage between terminals 1 (–) on TB2 and 6M (+) with the handset button pressed. The TS–352B/U must indicate **+620 ± 31 volts dc** Modulate the transmitter by speaking into the microphone. The TS–352B/U must indicate not less than +600 volts dc.

k. Measure the ripple between terminal 6 (+) and GND. The ripple must be not more than **18** volts peak-to-peak.

l. Measure the ripple between terminal 6M (+) and GND. The ripple must be not more than **18** volts peak-to-peak.

10–15. Power Supply PP–4600/SRC–32Y, Voltage and Ripple Tests

a. Connect the power supply to an RT–826/SRC–32 known to be in good operating condition. Connect the dummy antenna to the RT unit.

b. Measure the resistance from each power input terminal to the power supply chassis with the TS–352B/U. The resistance must be greater than 200,000 ohms for each measurement.

c. Connect the input of the power supply to a 115-volt ac source capable of delivering 20 amperes.

d. Set the RT unit RECEIVER and TRANS. FIL. switches to ON. Allow 1 minute for warmup.

e. Measure the input voltage with the TS–352B/U. The TS–352B/U must indicate 115 volts ac ±5 percent.

f. Measure the dc voltage between terminals 4 (+) and 1 (–) on TB2 in the power supply. The TS–352B/U must indicate 280 volts dc ±28.

g. Measure the dc voltage between terminals 5 (–) and 1 (+) on TB2. Vary the modulator bias control R3 over its range and be sure the TS–352B/U indication varies from –16 volts dc to –36 volts dc, ±10 percent. Set the control for a TS–352B/U indication of –30 volts dc.

h. Measure the ac voltage between terminal 3 and terminal 1 (GND) on TB2. The voltage must be 34 volts ac ±3.4.

i. Key the transmitter and measure the dc voltage between terminals 6 (+) and 1 (–) on TB2. The voltage must be +640 volts dc ±32.

j. Use the OS–8C/U, measure the ripple between terminal 4 (+) and GND (1) on TB2. The ripple should be not more than 1 volt peak-to-peak.

k. Measure the ripple between terminal 6 (+) and GND with the handset button pressed. The ripple should be not more than 3 volts peak-to-peak.

10–16. Control, Remote Switching C–7270/SRC–32, Switching and Pilot Lamp Tests

Tests of the C–7270/SRC–32 require power sources of 300 volts dc ±30 at 20 milliamperes, and 32 volts ac ±3.2 at 5 amperes. Any of the power supplies used with Radio Set AN/SRC–32(*) will also provide suitable voltages. To perform the tests, proceed as follows:

a. Connect the lugged ends of the wires in Cable Assembly CX–10472/SRC–32 to the terminals on TB3 and TB4 on the RC unit (figs. 7–8 and 7–9).

b. Connect the 12-pin connector on the CX–10472/SRC–32 cable assembly to the 12-pin connector on Ledex motor and switch assembly.

c. Connect the wires marked K, 2, and 3 as follows:

K to +300 vdc nominal.
2 to common return.
3 to 32 vac nominal.

d. Jumper the Ledex motor case to the common return. Set the remote control unit channel selector switch to 0 and allow the Ledex motor to position itself. Connect the TS–352B/U between the green/white wire (+) on the Ledex slave switch and common (refer to fig. 8–21 for switch wiring). The TS–352B/U should indicate the nominal 300 volts dc.

e. Connect the TS–352B/U positive lead to the black wire on the switch. The meter should indicate 0 volt. Set the channel selector switch to 10. The motor should rotate one step and stop. The TS–352B/U should indicate 300 volts dc.

f. Connect the TS–352B/U to the switch wires representing channels 9 through 1 in turn. Connect the positive TS–352B/U lead to the wire for the channel next lower than the channel selector switch setting and observe that the TS–352B/U indicates 0 volt dc. Position the channel selector switch to the channel corresponding to the switch wire color code and observe that the motor rotates one step and then stops, and the TS–352B/U indicates 300 volts dc.

g. Jumper terminal B of TB1 to the common return (wire #2). Jumper terminal P of TB1 to terminal 11, TB3. The RECEIVER lamp should illuminate.

h. Leaving return jumper connected, jumper terminal T of TB2 to terminal 11, TB3. The TRANS lamp should illuminate.

i. Remove handset wiring, all jumpers and external wiring from remote switch control terminal boards.

10–17. Control, Remote Switching C–7270/SRC–32, Resistance Measurements

a. Set controls as follows:
(1) SPEAKER–HANDSET to HANDSET.
(2) VOLUME to OFF.
(3) SQUELCH–OFF to OFF.
(4) CHANNEL SELECTOR to 0.

b. Measure the resistance between the following terminals with the TS–352B/U. The TS–352B/U should indicate continuity.
(1) TB1–B and TB2–B.
(2) TB1–R and TB2–R.
(3) TB1–G and TB2–G.
(4) TB1–RS and TB2–W.

c. Measure the resistance between the following terminals. The TS–352B/U should indicate an open circuit.
(1) TB1–R and TB1–B.
(2) TB1–G and TB1–B.

d. Measure the resistance between terminals TB2–S and TB2–B. The TS–352B/U should indicate continuity. Set SQUELCH–OFF switch to SQUELCH. The TS–352B/U should indicate an open circuit.

e. Measure the resistance between TB2–W and TB2–B while varying the VOLUME control over its range. The TS–352B/U indication should vary from approximately 3 ohms to approximately 20 ohms.

f. Measure the resistance between TB1–W and TB2–W while varying the VOLUME control over its range. The TS–352B/U indication should vary from 0 to approximately 7 ohms. Set the SPEAKER–HANDSET switch to SPEAKER. The TS–352B/U should indicate an open circuit.

CHAPTER 11

SHIPMENT AND LIMITED STORAGE AND DEMOLITION TO PREVENT ENEMY USE

Section I. SHIPMENT AND LIMITED STORAGE

Note. The circumstances involved in shipment and storage vary and, therefore, no definite procedure for repacking can be given. The following instructions are recommended as a guide for preparing Radio Set AN/SRC-32(*) and Control, Remote Switching C-7270/SRC-32 for transportation and storage.

11-1. Removing From Service

a. Deactivate the power source and attach warning tag such as PERSONNEL HAZARD—DO NOT RESTORE POWER.

b. Remove the power supply case and disconnect the source cable(s) at both ends.

c. If any other facilities are using source power, remove warning tag and restore power.

11-2. Disassembly and Removal of Power Supply

a. Remove interconnecting cable from TB-1 at the power supply.

b. Dismount the power supply. Applicable portions of the installation instructions (ch 2) will be helpful.

c. Reassemble power supply and set aside to be repackaged.

11-3. Disassembly and Removal of RT Unit

a. Unlatch and remove the case.

b. Disconnect the lead-in cable and remove the feedthrough insulator.

c. Loosen the cable clamps on the bottom apron and remove the ground cable, power cable, and handset cable. (If the radio set is equipped with an RC unit, follow the instructions given in paragraph 11-4 before performing the procedure given in *d* and *e* below.)

d. Loosen the four mounting bolts and lift off the RT unit.

e. Replace and latch the case.

11-4. Disassembly and Removal of RC Unit

a. Loosen the handwheels and dismount the RC unit (ch 7).

b. Remove the two self-tapping screws from the bottom and slide the case back, exposing the terminal boards.

c. Remove the two remote cables from terminal boards TB-2, TB-3, and TB-4. Do not remove any wires from TB-1.

d. At the RT unit, unplug the remote drive cable (P1-1) and remove it, pulling up through the cable clamp. Disconnect and remove the remote signal cable.

e. Replace the RC unit case.

f. Dismount the bracket and lay aside for repackaging, along with the RC unit and handset and the remote cables.

11-5. Disassembly and Removal of Antenna

a. Disconnect the lead-in cable at the antenna (fig. 2-6).

b. Unscrew and remove the whip section (lower the antenna if not resting in the storage clip).

c. Remove the 10-24 self-tapping screw and remove the antenna mast from the base.

d. Dismount the base, mounting bracket, and storage clip.

e. Guard the whip section with the original paper shipping sleeve or equivalent and slide it into the hollow mast. Cap or tape the ends of the mast.

11–6. Repacking for Shipment or Limited Storage

The exact procedure for repackaging depends on the material available and the conditions under which the equipment is to be shipped or stored. Adapt the procedures outlined below whenever possible. The information concerning the original packaging (ch. 2) will also be helpful.

a. Material Requirements. The following materials are required for packaging Radio Set AN/SRC–32(*) and Control, Remote Switching C–727/SRC–32. For stock numbers of materials, refer to SB 38–100.

Material	Quantity
Waterproof paper	300 sq ft
Waterproof tape	75 ft
Cotton twine	50 ft
Corrugated cardboard	30 sq ft (See note.)
Adhesive tape	75 ft
Filler material	25 lb
Wooden boxes, approx 4 x 2 x 2, 2 x 1/2 x 1, 15 x 1/2 x 1/2 x 1/2 ft.	One

Note. If the original or similar fiberboard containers are not available, additional corrugated cardboard will be required to wrap equipment. Quantity required: 85 sq ft additional; total quantity required: 115 sq ft.

b. Packaging with Original Materials. Package the items of Radio Set AN/SRC–32(*) as outlined below.

(1) Repackage the various items. The procedures listed in section I, chapter 2 will be helpful. Use new barrier bags, tape, and paper.

(2) Blunt the sharp corners of containers and other stiff materials to prevent piercing barrier bag(s).

c. Packaging With New Materials.

(1) *RT unit.* Cushion the RT unit on all sides with pads of filler material. Place the cushioned unit within a wrap of corrugated cardboard. Secure the wrap with adhesive tape.

(2) *Power supply.* Cushion and wrap the power supply in a like manner.

(3) *Miscellaneous components.* Wind each cable assembly into a coil of convenient dimensions and tie with cotton twine. Package the cables, the antenna base, clip and mounting bracket, the handset, the feedthrough insulator, salvaged hardware if any, and the running spares to insure mechanical and physical protection. Use filler material to cushion each item as required. Consolidate the miscellaneous components within a wrap of corrugated cardboard.

(4) Blunt all sharp corners before packing.

(5) For the antenna mast assembly, simulate the original fiber tube (fig. 2–2). Use corrugated cardboard and adhesive tap to wrap the assembly.

11–7. Packing

a. Line the large wooden box with waterproof paper to form a barrier bag. Use the waterproof tape to seal folds and splices as required.

b. Pack the RT unit, power supply, and miscellaneous components into the lined wooden box. Fill all voids and spaces with cushioning and/or corrugated cardboard in a manner which will prevent shifting of contents, and guard against piercing the barrier bag.

c. If available, add desiccant and a humidity indictor, and seal the waterproof paper over the contents with the waterproof tape.

d. Nail the cover onto the wooden box. If metal strapping equipment is available, reinforce the box closure.

e. Place the tube containing the antenna mast assembly within the long wooden box. Fill any voids or spaces with cushioning material and strips and wedges of corrugated cardboard so as to hold the mast securely in a straight line. Nail the cover onto the box.

f. Pack the RC unit, remote cables, and bracket in the small wooden box. Line the box and use packing procedures similar to those for the RT unit, except use two pieces of

waterproof paper to wrap and tie the RC unit and handset without disconnecting.

g. Nail the cover onto the wooden box.

11–8. Packaging for Limited Transport or Temporary Storage

For limited transport such as to a nearby vessel for immediate reinstallation or involving temporary storage pending reinstallation in the same or a nearby vessel, use the following procedures:

a. Follow applicable procedures (paras 10–1 through 10–5), and then use the procedure given in *b* or *c* below.

b. If desired, the units and miscellaneous components may be hand-carried to a vessel docked alongside. Guard against damage to meter, knobs, panels, and handset, and protect against foul weather, moisture, or blowing sand or dust.

c. For limited transport by vehicle and/or temporary storage in a sheltered area, lay the RT unit face up and protect with cushioning material and a piece of corrugated cardboard. Arrange all the units and components so that they can be cushioned and tied or braced to prevent chafing and shifting. Cover with waterproof paper, secured with tape or twine.

Note. It is not necessary to waterproof the antenna mast assembly except at the open ends.

Section II. DEMOLITION OF MATERIEL TO PREVENT ENEMY USE

11–9. Authority for Demolition

The demolition procedures given in paragraph 11–10 will be used to prevent the enemy from using or salvaging this equipment. Demolition of the equipment will be accomplished only upon the order of the commander.

11–10. Methods of Destruction

Use any of the following methods to destroy the equipment:

a. Obliterate. Obliterate nomenclature, numbers, frequency legends, etc.; use axes or hammers.

b. Smash. Smash switches, controls, tubes, crystals, jacks, binding posts, resistors, capacitors, transformers, tube sockets, meters, oscillator assembly, cord plugs, chassis, and cases; use sledges, handaxes, pickaxes, hammers, or crowbars.

c. Cut. Cut power cords, above chassis wiring, and tuning coils; use axes, handaxes, or machetes.

b. Burn. Burn cords and technical manuals; use gasoline, kerosene, oil, flamethrowers, or incendiary grenades.

e. Bend. Bend panel and cabinet.

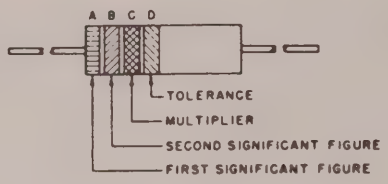
f. Explode. If explosives are necessary, use firearms, grenades, or TNT.

Warning: **Be extremely careful with explosives and incendiary devices. Use these items only when the need is urgent.**

g. Dispose. Bury or scatter the destroyed parts in slit trenches, foxholes, or throw them into streams.

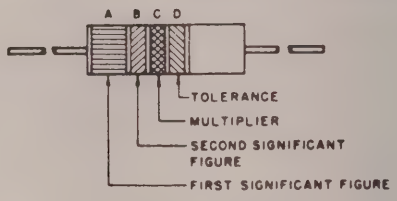
COLOR CODE MARKING FOR MILITARY STANDARD RESISTORS

COMPOSITION-TYPE RESISTORS



BAND A— Equal Width Band Signifies Composition-Type

WIREWOUND-TYPE RESISTORS



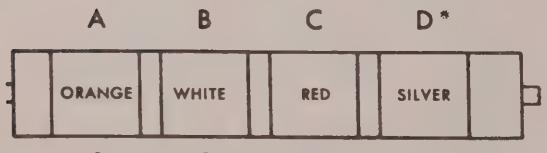
BAND A— Double Width Signifies Wire-wound Resistor

COLOR CODE TABLE

BAND A		BAND B		BAND C		BAND D*	
COLOR	FIRST SIGNIFICANT FIGURE	COLOR	SECOND SIGNIFICANT FIGURE	COLOR	MULTIPLIER	COLOR	RESISTANCE TOLERANCE (PERCENT)
BLACK	0	BLACK	0	BLACK	1		
BROWN	1	BROWN	1	BROWN	10		
RED	2	RED	2	RED	100		
ORANGE	3	ORANGE	3	ORANGE	1,000		
YELLOW	4	YELLOW	4	YELLOW	10,000	SILVER	± 10
GREEN	5	GREEN	5	GREEN	100,000	GOLD	± 5
BLUE	6	BLUE	6	BLUE	1,000,000		
PURPLE (VIOLET)	7	PURPLE (VIOLET)	7				
GRAY	8	GRAY	8	SILVER	0.01		
WHITE	9	WHITE	9	GOLD	0.1		

EXAMPLES OF COLOR CODING

BAND

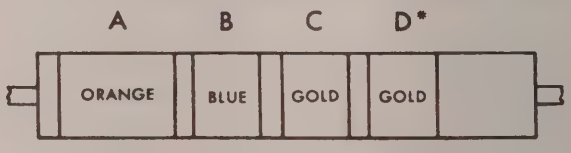


3 9 X100 ± 10%

NOMINAL RESISTANCE 3,900 Ohms

RESISTANCE TOLERANCE ± 10 percent

BAND



3 6 X0.1 ± 5%

3.6 Ohms

± 5 percent

STD-R2

*If Band D is omitted, the resistor tolerance is ±20%, and the resistor is not Mil-Std.

Figure 11-1. MIL-STD resistor color codes.

APPENDIX A

REFERENCES

Following is a list of applicable references available to the operator, organizational, direct support, general support, and depot maintenance personnel of Radio Sets AN/SRC–32, AN/SRC–32X, and AN/SRC–32Y, and Remote Switching Control C–7270/SRC–32.

AR 700–52	Licensing and Control of Sources of Ionizing Radiation
DA Pam 310–4	Index of Technical Manuals, Technical Bulletins, Supply Manuals (Types 7, 8, and 9), Supply Bulletins, and Lubrication Orders
DA Pam 310–7	U. S. Army Equipment Index of Modification Work Orders
TA 11–17	Signal Field Maintenance Shops
TA 11–100 (11–17)	Allowances of Signal Corps Expendable Supplies for Signal Field Maintenance Shops
TB SIG 225	Identification and Handling of Radioactive Signal Items
TB SIG 355–1	Depot Inspection Standard for Repaired Signal Equipment
TB SIG 355–2	Depot Inspection Standard for Refinishing Repaired Signal Equipment
TB SIG 355–3	Depot Inspection Standard for Moisture and Fungus Resistant Treatment
TB SIG 364	Field Instructions for Painting and Preserving Electronics Command Equipment
TM 9–213	Painting Instructions for Field Use
TM 11–487H–1/1	Military Standardization Handbook: Electronic Test Equipment
TM 11–1214A	Oscilloscope OS–8C/U.
TM 11–5094	Frequency Meters AN/URM–79 and AN/URM–82
TM 11–5551D	R.F. Signal Generator Set AN/URM–25D
TM 11–6625–200–12	Organizational Maintenance Manual: Multimeters ME–26A/U, ME-26B/U, ME-26C/U, and ME-26D/U
TM 11–6625–203–12	Operator and Organizational Maintenance: Multimeter AN/URM–105, Including Multimeter ME–77/U
TM 11–6625–274–12	Operator's and Organizational Maintenance Manual: Test Sets, Electron Tube TV–7/U, TV–7A/U, TV–7B/U, and TV–7D/U
TM 11–6625–316–12	Operator and Organizational Maintenance Manual: Test Sets, Electron Tube TV–2/U, TV–2A/U, TV–2B/U, and TV–2C/U
TM 11–6625–355–12	Organizational Maintenance Manual: Audio Oscillators TS–421/U and TS–421A/U.
TM 11–6625–366–15	Organizational, DS, GS, and Depot Maintenance Manual: Multimeter TS–352B/U
TM 38–750	Army Equipment Record Procedures

APPENDIX B
ITEMS TROOP INSTALLED OR AUTHORIZED LIST

Section I. INTRODUCTION

B-1. Scope

This appendix lists only items troop installed or authorized required by the crew/operator for installation, operation, and maintenance of Radio Sets AN/SRC-32, AN/SRC-32X, and AN/SRC-32Y.

B-2. General.

Items Troop Installed or Authorized List. A list, in alphabetical sequence, of items which, at the discretion of the unit commander, may accompany the end item, but are not subject to be turned in with the end item.

B-3. Explanation of Columns.

The following provides an explanation of columns found in the tabular listings:

a. Illustration. Not applicable.

b. Federal Stock Number. Indicates the Federal stock number assigned to the item and will be used for requisitioning purposes.

c. Part Number. Indicates the primary number used by the manufacturer (individual, company, firm, corporation, or government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications standards, and inspection requirements, to identify an item or range of items.

d. Federal Supply Code for Manufacturer (FSCM). The FSCM is a 5-digit numeric code used to identify the manufacturer, distributor, or Government agency, etc., and is identified in SB 708-42.

e. Description. Indicates the Federal item name and a minimum description required to identify the item.

f. Unit of Measure (U/M). Indicates the standard of basic quantity of the listed item as used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation, (e.g., ea, in., pr, etc.). When the unit of measure differs from the unit of issue, the lowest unit of issue that will satisfy the required units of measure will be requisitioned.

g. Quantity Furnished with Equipment. Not applicable.

h. Quantity Authorized (Items Troop Installed or Authorized Only). See Section II.

Section II. ITEMS TROOP INSTALLED OR AUTHORIZED LIST

(1) Federal Stock Number	(2) Part Number	(3) FSCM	(4) Description / Usable on Code	(5) Unit of Meas	(6) QTY Auth
			NOTE The following items are used on all models, and their quantities are mounted in or on equipments listed for storage purposes.		
5120-242-7410	332	94022	KEY, SOCKET HEADSCREW: (1)	EA	
	HS-206-063	-8664	KEY, SOCKET HEADSCREW: (1)	EA	

APPENDIX C

MAINTENANCE ALLOCATION

Section I. INTRODUCTION

C–1. General

This appendix provides a summary of the maintenance operations covered in the equipment literature for Radio Sets AN/SRC–32, AN/SRC–32X, and AN/SRC–32Y. It authorizes categories of maintenance for specific maintenance functions on repairable items and components and the tools and equipment required to perform each function. This appendix may be used as an aid in planning maintenance operations.

C–2. Explanation of Format for Maintenance Allocation Chart

a. Group Number. Not used.

b. Component Assembly Nomenclature. This column lists the item names of component units, assemblies, subassemblies, and modules on which maintenance is authorized.

c. Maintenance Function. This column indicates the maintenance category at which performance of the specific maintenance function is authorized. Authorization to perform a function at any category also includes authorization to perform that function at higher categories. The codes used represent the various maintenance categories as follows:

Code	Maintenance category
C	Operator/crew
O	Organizational maintenance
F	Direct support maintenance
H	General support maintenance
D	Depot maintenance

d. Tools and Equipment. The numbers appearing in this column refer to specific tools and equipment which are identified by these numbers in section III.

e. Remarks. Self-explanatory.

C–3. Explanation of Format for Tool and Test Equipment Requirements

The columns in the tool and test equipment requirements chart are as follows:

a. Tools and Equipment. The numbers in this column coincide with the numbers used in the tools and equipment column of the MAC. The numbers indicate the applicable tool for the maintenance function.

b. Maintenance Category. The codes in this column indicate the maintenance category normally allocated the facility.

c. Nomenclature. This column lists tools, test and maintenance equipment required to perform the maintenance functions.

d. Federal Stock Number. This column lists the Federal stock number.

e. Tool Number. Not used.

SECTION II. MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	RADIO SETS AN/SRC-32, AN/SRC-32X, AND AN/SRC-32Y	O											3,6,10,11,12	Preventive maintenance replace
				O									3,6,10,11,12	fuses, lamps and tubes. Replace
									O				3,6,10,11,12	and repair cables.
										O			3,6,10,11,12	
		F											1 thru 7,9,10, 10,11,12	Troubleshoot mechanical electrical parts and material.
			F										1 thru 7,9,10, 11,12	Replace parts and material, adjust, align, and install.
					F								1 thru 7, 9 thru 12	
						F							1 thru 7, 9 thru 12	
								F					1 thru 7, 9 thru 12	
									F				1 thru 7, 9 thru 12	
										F			1 thru 7, 9 thru 12	
			H										1 thru 12	Troubleshoot mechanical and
						H							1 thru 12	electrical. Repair, replace,
							H						1 thru 12	align, calibrate, install.
								H					1 thru 12	
									H				1 thru 12	
										H			1 thru 12	
											D		1 thru 12	Overhaul and rebuild
												D	1 thru 12	

SECTION III. TOOL AND TEST EQUIPMENT REQUIREMENTS

TOOLS AND EQUIPMENT	MAINTENANCE CATEGORY	NOMENCLATURE	FEDERAL STOCK NUMBER	TOOL NUMBER
		RADIO SETS AN/SRC-32, AN/SRC-32X, AND AN/SRC-32Y (continued)		
1	F,H,D	RADIO FREQUENCY SIGNAL GENERATOR AN/URH-25D	6625-649-5193	
2	F,H,D	FREQUENCY METER AN/URM-79	6625-688-9749	
3	O,F,H,D	MULTIMETER AN/URM-105	6625-581-2036	
4	F,H,D	MULTIMETER ME-26/U	6625-646-9409	
5	F,H,D	OSCILLOSCOPE OS-8/U	6625-643-1740	
6	O,F,H,D	MULTIMETER TS-352B/U	6625-553-0142	
7	F,H,D	SIGNAL GENERATOR TS-421A/U	6625-669-0228	
8	H,D	SPECTRUM ANALYZER TS-723/U	6625-668-9418	
9	H,D	TEST SET, ELECTRONIC TUBE TV-2/U	6625-699-0263	
10	O,F,H,D	TEST SET, ELECTRONIC TUBE TV-7D/U	6625-820-0064	
11	O,F,H,D	TOOL KIT TK-87/U	5180-690-4552	
12	O,F,H,D	TOOL KIT TK-113/MXQ-28	5180-980-7361	

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By Order of the Secretary of the Army:

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Chief of Staff.

Official:

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Major General, United States Army,
The Adjutant General.

Distribution:

To be distributed in accordance with DA Form 12-51 requirements for Operator, Radio Set AN/SRC-32.

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8–22. Receiver Sensitivity, $\frac{S+N}{N}$, ANL and Squelch Tests

a. Test Equipment and Materials. Signal Generator AN/URM–25D; Multimeter ME–26C/U; resistor, 5-ohm, 4-w.

b. Test Connections and Conditions. Connect the equipment as shown in figure 8–16. Turn on all equipment and allow to warm up for 15 minutes.

c. Procedure.

			output level to 3 microvolts, 30% modulated at 1,000 cycles. Advance the SQUELCH control clockwise until the A.N.L. switch opens.	the A.N.L. switch opens.
12	Same as step 11.	CHANNELS: 1	Remove the 5-ohm resistor from the output terminals and connect the speaker. Set the AN/	

8–22. Receiver Sensitivity, $\frac{S+N}{N}$, ANL and Squelch Tests

a. Test Equipment and Materials. Signal Generator AN/URM–25D; Multimeter ME–26C/U; resistor, 5-ohm, 4-w.

b. Test Connections and Conditions. Connect the equipment as shown in figure 8–16. Turn on all equipment and allow to warm up for 15 minutes.

c. Procedure.

Step No.	Control settings: Test equipment	Control settings: Equipment under test	Test procedure	Performance standard
1	*AN/URM–25D* FREQUENCY BAND switch: D Main tuning dial: 2,079 kcs CARRIER CONTROL: Full ccw METER READS: RF MOD. SELECTOR: OFF MICROVOLTS: Full cw MULTIPLIER: X.1 CARRIER RANGE: DEFG % MODULATION: Full ccw *ME–26C/U* Range: 3V SELECTOR: AC	VOLUME: Full cw CONTROL: LOCAL SQUELCH: OFF CHANNELS: 1 RECEIVER: ON TRANS. FIL.: OFF	*a.* Adjust the AN/URM–25D CARRIER CONTROL until meter M101 indicates 100 on upper (RF) scale. Adjust the MICROVOLTS control for output of 2 microvolts. Set the METER READS switch to % MOD., MOD SELECTOR switch to 400, and adjust the % MODULATION until meter indicates 30%. Adjust the main tuning dial for maximum indication on the ME–26/U.	*a.* The ME–26C/U indicates not less than 1.25 volt.
			b. Reduce the AN/URM–25D output to zero.	*b.* The ME–26/U indicates not more than .625 volt.
2	Leave controls in positions last indicated in step 1.	CHANNELS: 2	*a.* Adjust the AN/URM–25D frequency to 2,082 kcs.	*a.* Same as step 1*a*.
			b. Same as step 1*b*	*b.* Same as step 1*b*.
3	Same as step 2.	CHANNELS: 3	*a.* Adjust the AN/URM–25D frequency to 2,182 kcs.	*a.* Same as step 1*a*.
			b. Same as step 1*b*	*b.* Same as step 1*b*.
4	Same as step 2.	CHANNELS: 4	*a.* Adjust the AN/URM–25D frequency to 2,264 kcs.	*a.* Same as step 1*a*.
			b. Same as step 1*b*	*b.* Same as step 1*b*.
5	Same as step 2.	CHANNELS: 5	*a.* Adjust the AN/URM–25D frequency to 2,382 kcs.	*a.* Same as step 1*a*.
			b. Same as step 1*b*	*b.* Same as step 1*b*.
6	Same as step 2.	CHANNELS: 6	*a.* Adjust the AN/URM–25D frequency to 2,638 kcs.	*a.* Same as step 1*a*.
			b. Same as step 1*b*	*b.* Same as step 1*b*.
7	Same as step 2.	CHANNELS: 7	*a.* Adjust the AN/URM–25D frequency to 2,670 kcs.	*a.* Same as step 1*a*.
			b. Same as step 1*b*	*b.* Same as step 1*b*.
8	Same as step 2.	CHANNELS: 8	*a.* Adjust the AN/URM–25D frequency to 2,716 kcs.	*a.* Same as step 1*a*.
			b. Same as step 1*b*	*b.* Same as step 1*b*.
9	Same as step 2.	CHANNELS: 9	*a.* Adjust the AN/URM–25D frequency to 2,738 kcs.	*a.* Same as step 1*a*.
			b. Same as step 1*b*	*b.* Same as step 1*b*.
10	Same as step 2.	CHANNELS: 10	*a.* Adjust the AN/URM–25D frequency to 3,105 kcs.	*a.* Same as step 1*a*.
			b. Same as step 1*b*	*b.* Same as step 1*b*.
11	Same as step 2.	CHANNELS: 1	Adjust the AN/URM–25D frequency to 2,078 kcs. Set the output level to 3 microvolts, 30% modulated at 1,000 cycles. Advance the SQUELCH control clockwise until the A.N.L. switch opens.	The ME–26/U indication decreases .1 to .2 volt when the A.N.L. switch opens.
12	Same as step 11.	CHANNELS: 1	Remove the 5-ohm resistor from the output terminals and connect the speaker. Set the AN/URM–25D output to 0. Adjust the VOLUME control until the background noise is heard in the speaker. Rotate the SQUELCH control clockwise until the noise just disappears. Increase the AN/URM–25D output until the signal is heard in the speaker.	
13	Same as step 12.	Same as step 12.	Set the SQUELCH control to max cw position. Increase the AN/URM–25D output until the signal is heard in the speaker.	The AN/URM–25D output must be not less than 3,500 microvolts.

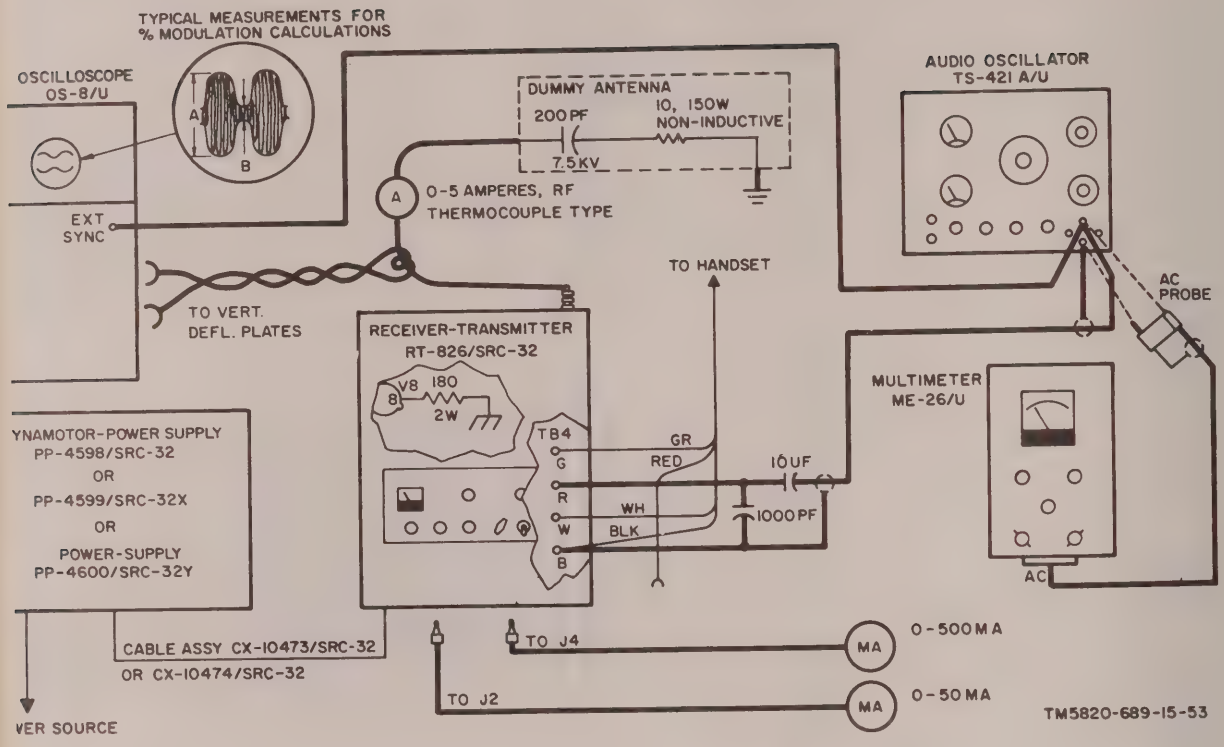


Figure 8-17. Transmitter power output and modulation tests.

3	Same as step 1, except CHANNELS switch set to 3.	Same as step 1	Same as step 1.
4	Same as step 1, except CHANNELS switch set to 4.	Same as step 1	Same as step 1.
5	SAME as step 1, except CHANNELS switch set to 5.	Same as step 1	Same as step 1.
6	Same as step 1, except CHANNELS switch set to 6.	Same as step 1	Same as step 1.
7	Same as step 1, except CHANNELS switch set to 7.	Same as step 1	Same as step 1.
8	Same as step 1, except CHANNELS switch set to 8.	Same as step 1	Same as step 1.
9	Same as step 1, except CHANNELS switch set to 9.	Same as step 1	Same as step 1.
10	Same as step 1, except CHANNELS switch set to 10.	Same as step 1	Same as step 1.

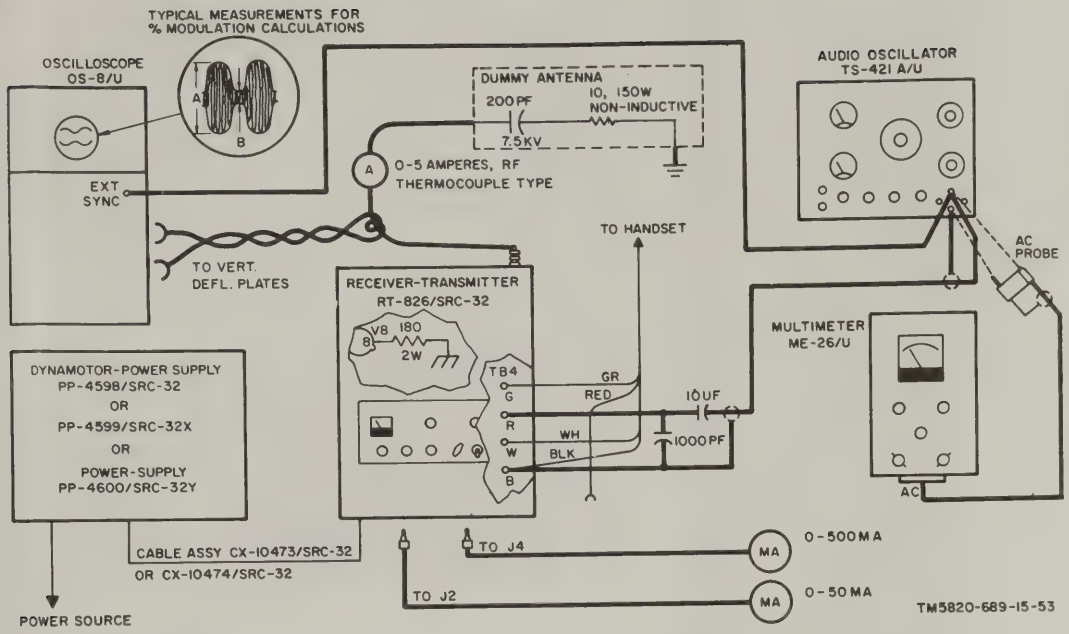


Figure 8-17. Transmitter power output and modulation tests.

8–23. Transmitter Power Output Tests

a. Test Equipment and Materials. RF ammeter, 0–5 amperes, thermocouple type; dc milliammeter, 0-500 milliamperes; dc milliammeter, 0–50 milliamperes; dummy antenna.

b. Test Connections and Conditions. Connect the above equipment as shown in figure 8–17. Turn on RT unit and allow to warm up.

c. Procedure.

Step No.	Control settings: Test equipment	Equipment under test	Test procedure	Performance standard
1		VOLUME: OFF CONTROL: LOCAL SQUELCH: OFF CHANNELS: 1 RECEIVER: ON TRANS. FIL: ON	Depress the handset switch and record the meter indications. If necessary, adjust the MOD BIAS control on the power supply for correct MOD PLATE meter indication. Release the handset button.	The panel meter indicates 400 ma ±40. The FINAL GRID meter indicates not less than 18 ma. MOD PLATE meter indicates 150 ma. ±10. The rf ammeter indicates not less than 3.15 amperes.
2		Same as step 1, except CHANNELS switch set to 2.	Same as step 1	Same as step 1.
3		Same as step 1, except CHANNELS switch set to 3.	Same as step 1	Same as step 1.
4		Same as step 1, except CHANNELS switch set to 4.	Same as step 1	Same as step 1.
5		SAME as step 1, except CHANNELS switch set to 5.	Same as step 1	Same as step 1.
6		Same as step 1, except CHANNELS switch set to 6.	Same as step 1	Same as step 1.
7		Same as step 1, except CHANNELS switch set to 7.	Same as step 1	Same as step 1.
8		Same as step 1, except CHANNELS switch set to 8.	Same as step 1	Same as step 1.
9		Same as step 1, except CHANNELS switch set to 9.	Same as step 1	Same as step 1.
10		Same as step 1, except CHANNELS switch set to 10.	Same as step 1	Same as step 1.

8–24. Transmitter Modulation Test

a. Test Equipment and Materials. Audio Oscillator TS–421A/U; Oscilloscope OS–8C/U; Multimeter ME–26C/U; resistor, 180-ohm, 2-w; dummy antenna; RF ammeter, 0–5 amperes, thermocouple type; capacitor, 1,000 pf; capacitor, 10 μf paper; hookup wire and shielded audio cable as required.

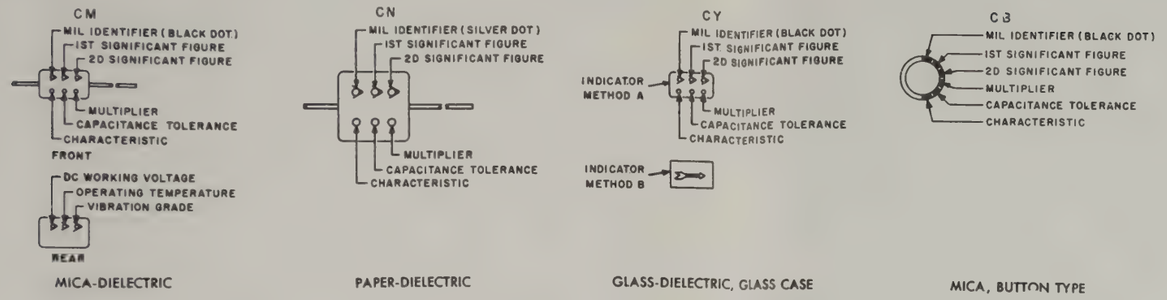
b. Test Connections and Conditions. Connect the above equipment as shown in figure 8–17. Turn on equipment and allow to warm up for 15 minutes.

c. Procedure.

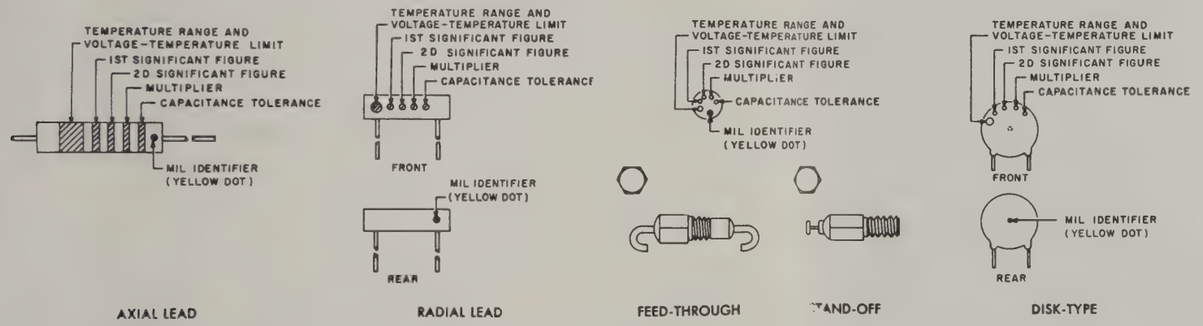
Step No.	Control settings: Test equipment	Control settings: Equipment under test	Test procedure	Performance standard
1	*TS–421A/U* Frequency range: X10 Dial setting: 100 Amplitude: Ccw Impedance: 50 Output att: 0 *OS–8C/U* Horiz. amp: (Nom) Sync: Ext. Sw freq.: 500 cps Vert amp: Not used Position: Center Int., focus: Normal Vert defl plates: Pickup coil *Multimeter ME–26/U* Range: 1V Selector: Ac	VOLUME: OFF CONTROL: LOCAL SQUELCH: OFF CHANNELS: 1 RECEIVER: ON TRANS. FIL.: ON	*a.* Do not connect the ME–26/U or the TS–421A/U yet. *b.* Key the transmitter and adjust the turns and/or position of the pickup coil to obtain 1/2 full-scale vertical amplitude display on the OS–8C/U.	*a.* None. *b.* None.
2	Same as step 1	Same as step 1	*a.* Key the transmitter and adjust the TS–421A/U amplitude control and the OS–8/U sweep frequency and synchronized amplitude controls to obtain a 2-cycle envelope display. Release the key. *b.* Key the transmitter and adjust the TS–421A/U amplitude control for the greatest ratio between maximum and minimum envelope amplitudes. Measure the maximum and minimum amplitudes. Release the key. *c.* Calculate the modulation percentage, using the following formula: $\% \text{ modulation} = \frac{A-B}{A+B}$ Where: A=maximum height of display. B=minimum height of display. Repeat *b* above, if necessary, to obtain 90% modulation, minimum.	*a.* None. *b.* None. *c.* None.
3	Same as step 1	Same as step 1	Connect the ME–26C/U to the TS–421A/U and measure the amplitude of the 1,000-cps signal of *b*.	The ME–26/U should indicate between .35 and .45 vac.

COLOR CODE MARKING FOR MILITARY STANDARD CAPACITORS

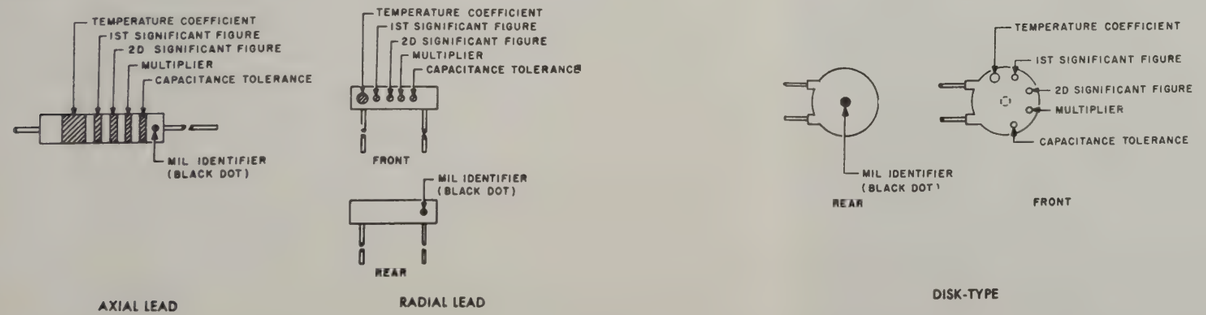
GROUP I Capacitors, Fixed, Various-Dielectrics, Styles CM, CN, CY, and CB



GROUP II Capacitors, Fixed Ceramic-Dielectric (General Purpose) Style CK



GROUP III Capacitors, Fixed, Ceramic-Dieletric (Temperature Compensating) Style CC



COLOR CODE TABLES

TABLE I – For use with Group I, Styles CM, CN, CY and CB

COLOR	MIL ID	1st SIG FIG	2nd SIG FIG	MULTIPLIER[1]	CAPACITANCE TOLERANCE				CHARACTERISTIC[2]				DC WORKING VOLTAGE	OPERATING TEMP. RANGE	VIBRATION GRADE
					CM	CN	CY	CB	CM	CN	CY	CB	CM	CM	CM
BLACK	CM, CY CB	0	0	1			± 20%	± 20%		A				−55° to +70°C	10–55 cps
BROWN		1	1	10					B	E		B			
RED		2	2	100	± 2%		± 2%	± 2%	C		C			−55° to +85°C	
ORANGE		3	3	1,000		± 30%			D			D	300		
YELLOW		4	4	10,000					E					−55° to +125°C	10–2,000 cps
GREEN		5	5		± 5%				F				500		
BLUE		6	6											−55° to +150°C	
PURPLE (VIOLET)		7	7												
GREY		8	8												
WHITE		9	9												
GOLD				0.1			± 5%	± 5%							
SILVER	CN				± 10%	± 10%	± 10%	± 10%							

TABLE II – For use with Group II, General Purpose, Style CK

COLOR	TEMP. RANGE AND VOLTAGE – TEMP. LIMITS[3]	1st SIG FIG	2nd SIG FIG	MULTIPLIER[1]	CAPACITANCE TOLERANCE	MIL ID
BLACK		0	0	1	± 20%	
BROWN	AW	1	1	10	± 10%	
RED	AX	2	2	100		
ORANGE	BX	3	3	1,000		
YELLOW	AV	4	4	10,000		CK
GREEN	CZ	5	5			
BLUE	BV	6	6			
PURPLE (VIOLET)		7	7			
GREY		8	8			
WHITE		9	9			
GOLD						
SILVER						

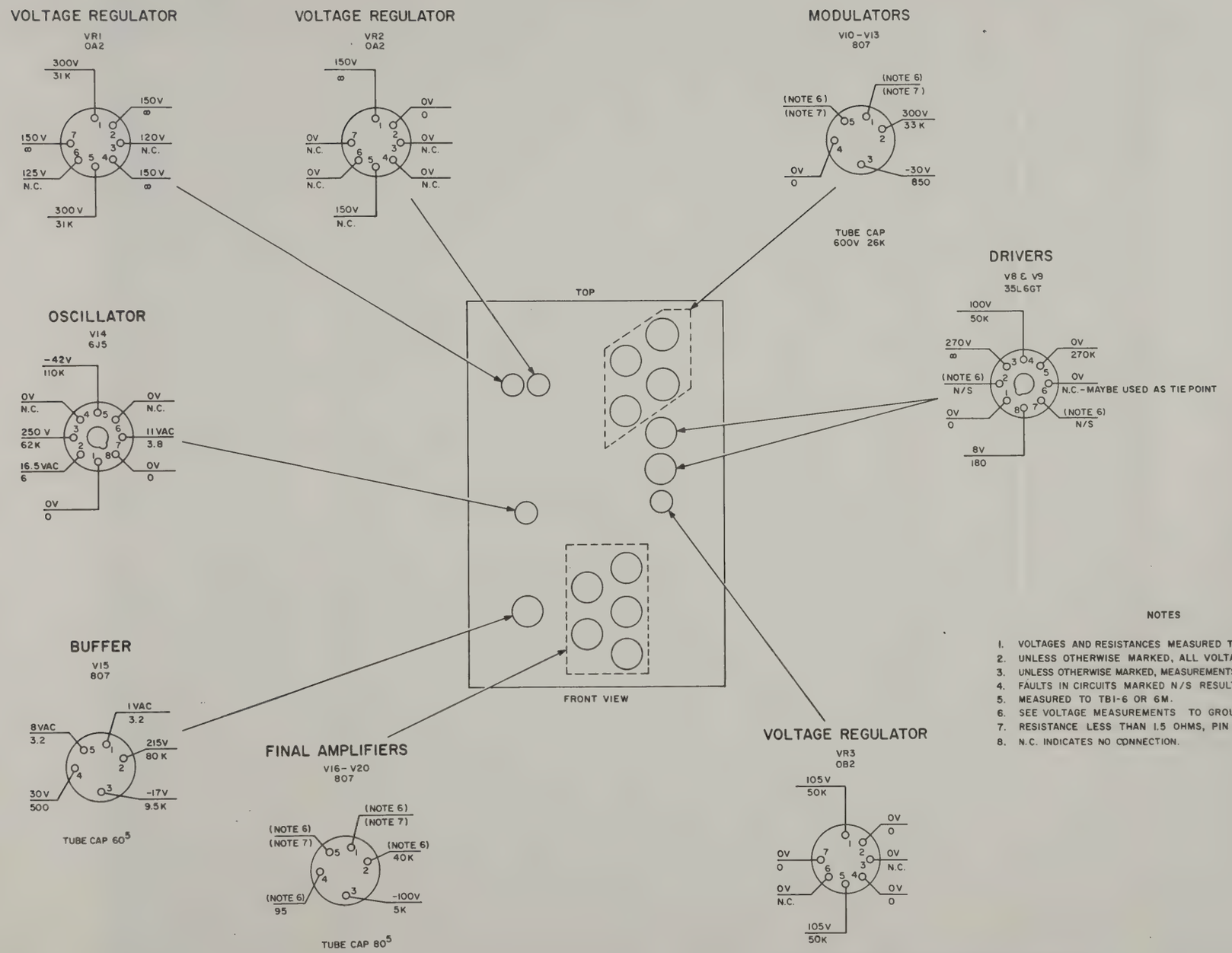
TABLE III – For use with Group III, Temperature Compensating, Style CC

COLOR	TEMPERATURE COEFFICIENT[4]	1st SIG FIG	2nd SIG FIG	MULTIPLIER[1]	CAPACITANCE TOLERANCE		MIL ID
					Capacitances over 10uuf	Capacitances 10uuf or less	
BLACK	0	0	0	1		± 2.0uuf	CC
BROWN	−30	1	1	10	± 1%		
RED	−80	2	2	100	± 2%	± 0.25uuf	
ORANGE	−150	3	3	1,000			
YELLOW	−220	4	4				
GREEN	−330	5	5		± 5%	± 0.5uuf	
BLUE	−470	B	6				
PURPLE (VIOLET)	−750	7	7				
GREY		8	8	0.01			
WHITE		9	9	0.1	± 10%		
GOLD	+100					± 1.0uuf	
SILVER							

1. The multiplier is the number by which the two significant (SIG) figures are multiplied to obtain the capacitance in uuf.
2. Letters indicate the Characteristics designated in applicable specifications: MIL–C–5, MIL–C–91, MIL–C–11272, and MIL–C–10950 respectively.
3. Letters indicate the temperature range and voltage-temperature limits designated in MIL–C–11015.
4. Temperature coefficient in parts per million per degree centigrade.

STD–CC

Figure 11–2. MIL–STD capacitor color codes.



VOLTAGE MEASUREMENTS TO GROUND					
TUBE NO.	PIN 1	PIN 5	PIN 2	PIN 4	PIN 7
V 10	25 VAC	14.5 VAC			
V 11	21 VAC	27 VAC			
V 12	14.5VAC	8 VAC			
V 13	27 VAC	32.5 VAC			
V 16	27 VAC	32.5 VAC	280 VDC	8 VDC	
V 17	21 VAC	27 VAC	280 VDC	8 VDC	
V 18	8 VAC	1 VAC	310 VDC	8.5 VDC	
V 19	15 VAC	8 VAC	310 VDC	8.5 VDC	
V 20	21 VAC	15 VAC	310 VDC	8.5 VDC	
V 8			32.5 VAC		1 VAC
V 9			32.5 VAC		1 VAC

NOTES

1. VOLTAGES AND RESISTANCES MEASURED TO GROUND, UNLESS OTHERWISE NOTED.
2. UNLESS OTHERWISE MARKED, ALL VOLTAGE D.C.
3. UNLESS OTHERWISE MARKED, MEASUREMENTS TAKEN WITH 20,000 OHMS-PER-VOLT D.C., 1000 OHMS-PER-VOLT A.C. MULTIMETER.
4. FAULTS IN CIRCUITS MARKED N/S RESULT IN NO SIGNIFICANT CHANGE IN RESISTANCE.
5. MEASURED TO TB1-6 OR 6M.
6. SEE VOLTAGE MEASUREMENTS TO GROUND CHART.
7. RESISTANCE LESS THAN 1.5 OHMS, PIN 1 TO PIN 5.
8. N.C. INDICATES NO CONNECTION.

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Figure 11-3. RT-826/SRC-32 modulator-transmitter section, voltage and resistance diagram.

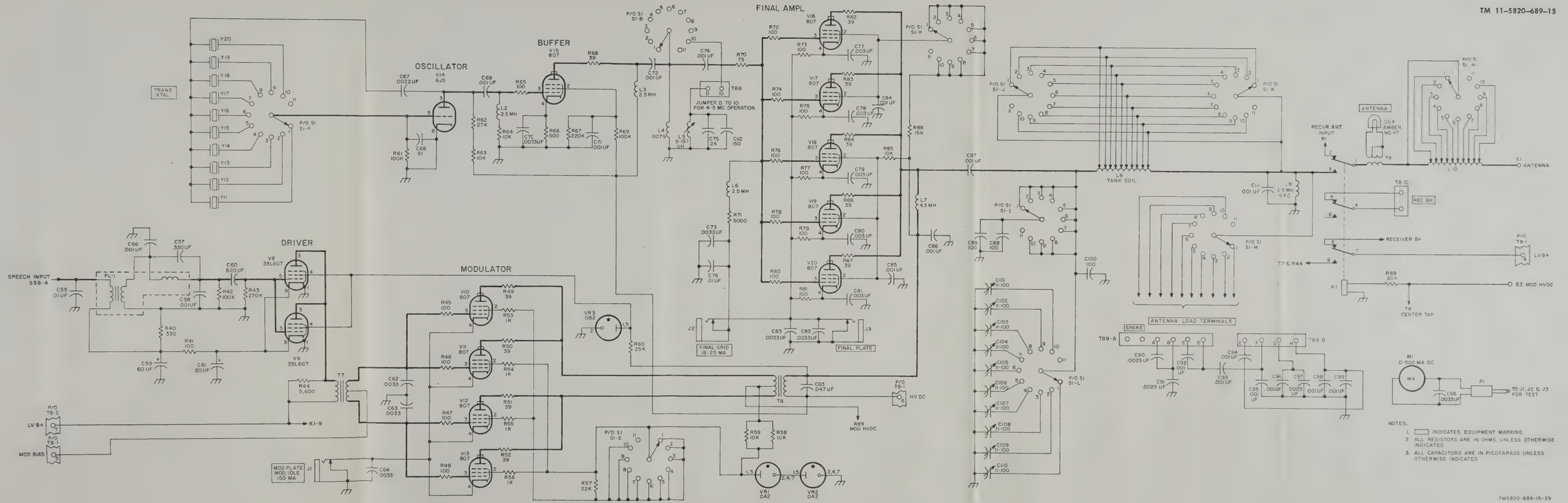
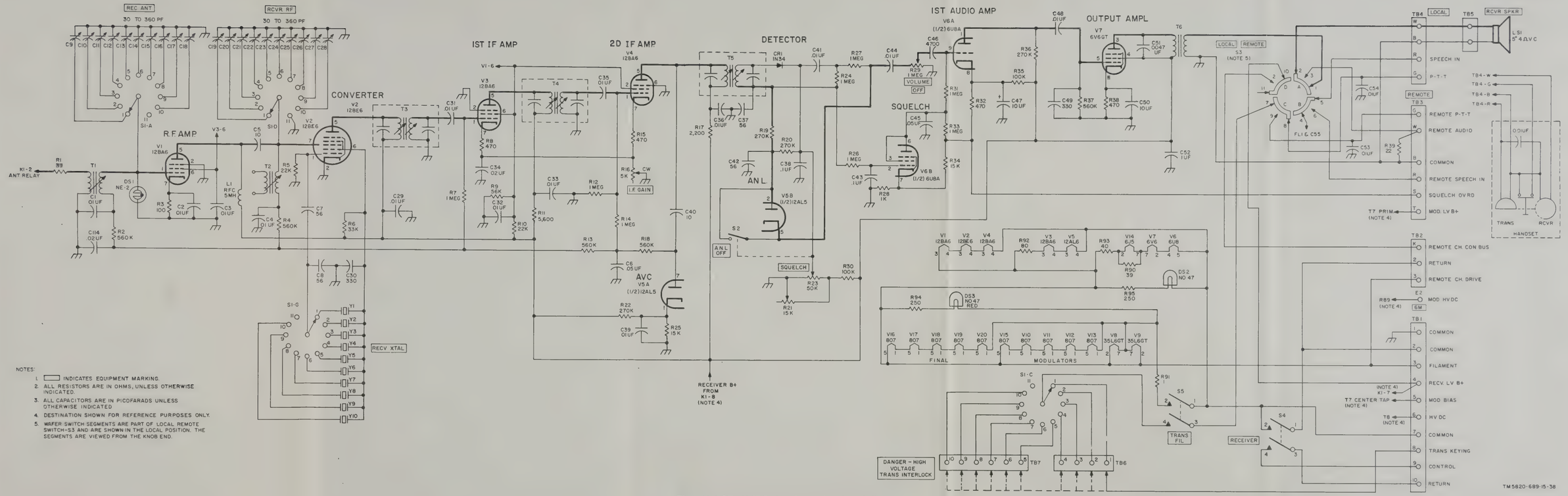


Figure 11-4. RT-826/SRC-32 modulator-transmitter section, schematic diagram.



NOTES:

1. ▭ INDICATES EQUIPMENT MARKING.
2. ALL RESISTORS ARE IN OHMS, UNLESS OTHERWISE INDICATED.
3. ALL CAPACITORS ARE IN PICOFARADS UNLESS OTHERWISE INDICATED.
4. DESTINATION SHOWN FOR REFERENCE PURPOSES ONLY.
5. WAFER SWITCH SEGMENTS ARE PART OF LOCAL REMOTE SWITCH-S3 AND ARE SHOWN IN THE LOCAL POSITION. THE SEGMENTS ARE VIEWED FROM THE KNOB END.

Figure 11-5. RT-826/SRC-32 receiver section schematic diagram.

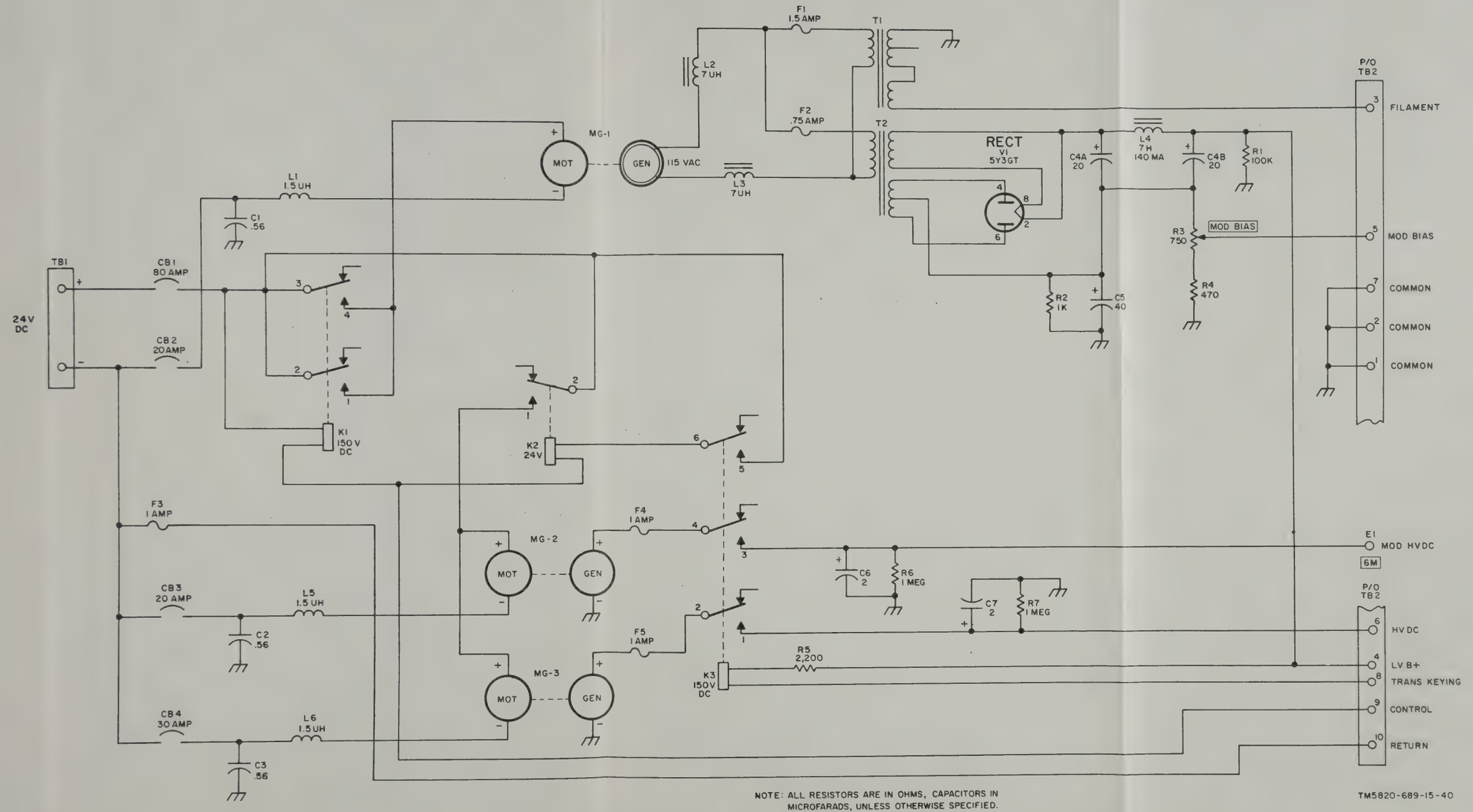
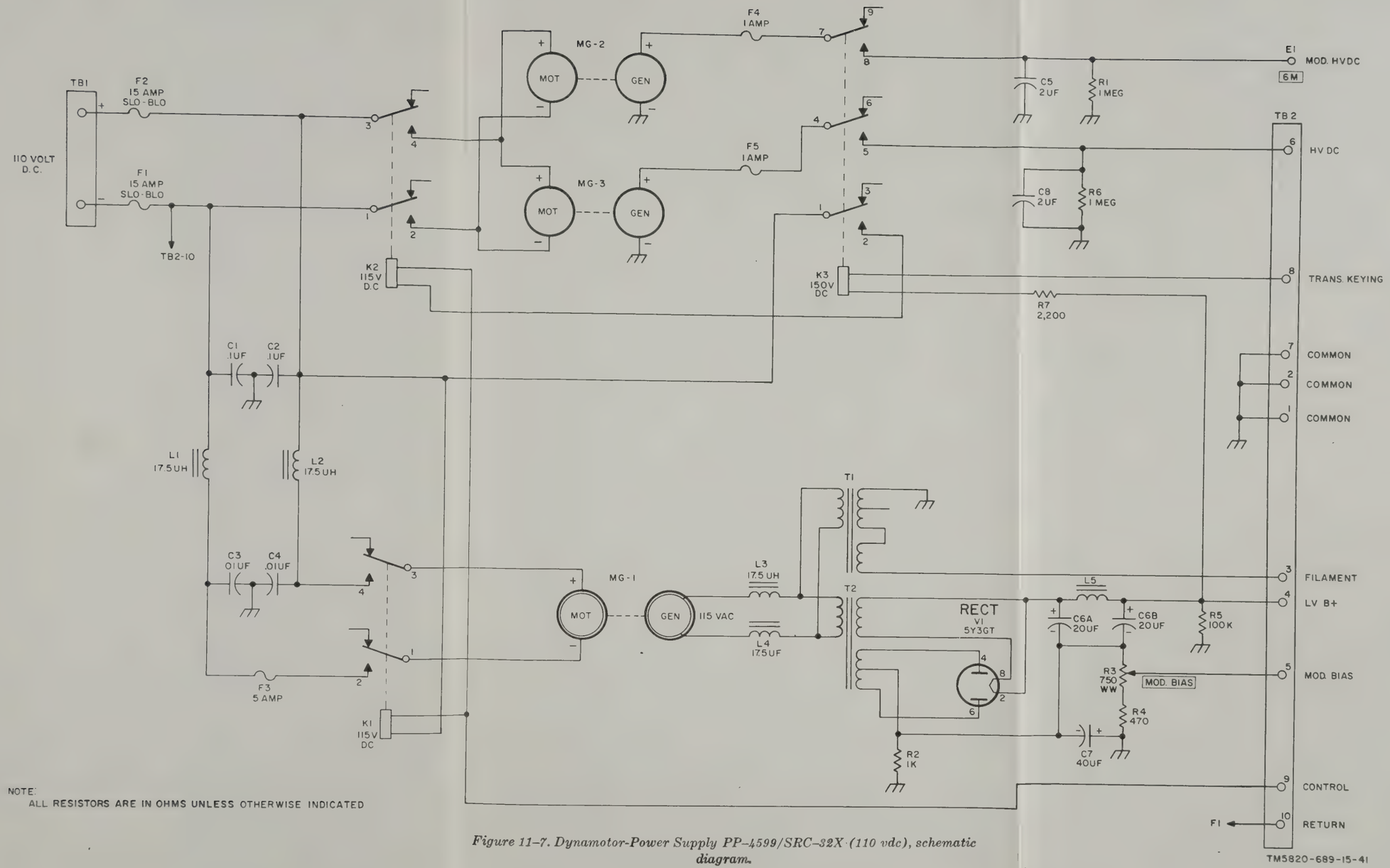
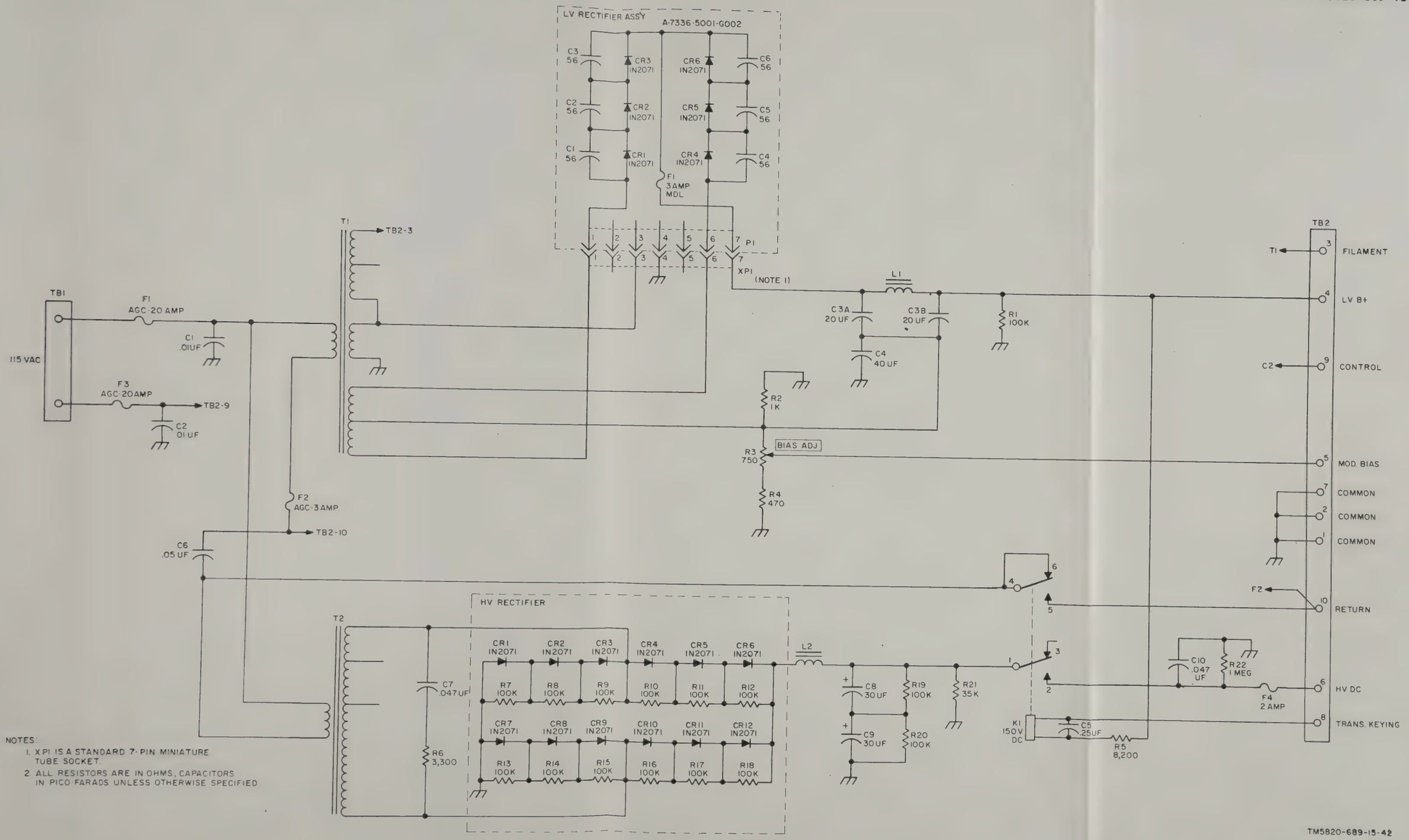


Figure 11–6. Dynamotor-Power Supply PP–4598/SRC–32 (24 vdc), schematic diagram.



NOTE:
ALL RESISTORS ARE IN OHMS UNLESS OTHERWISE INDICATED

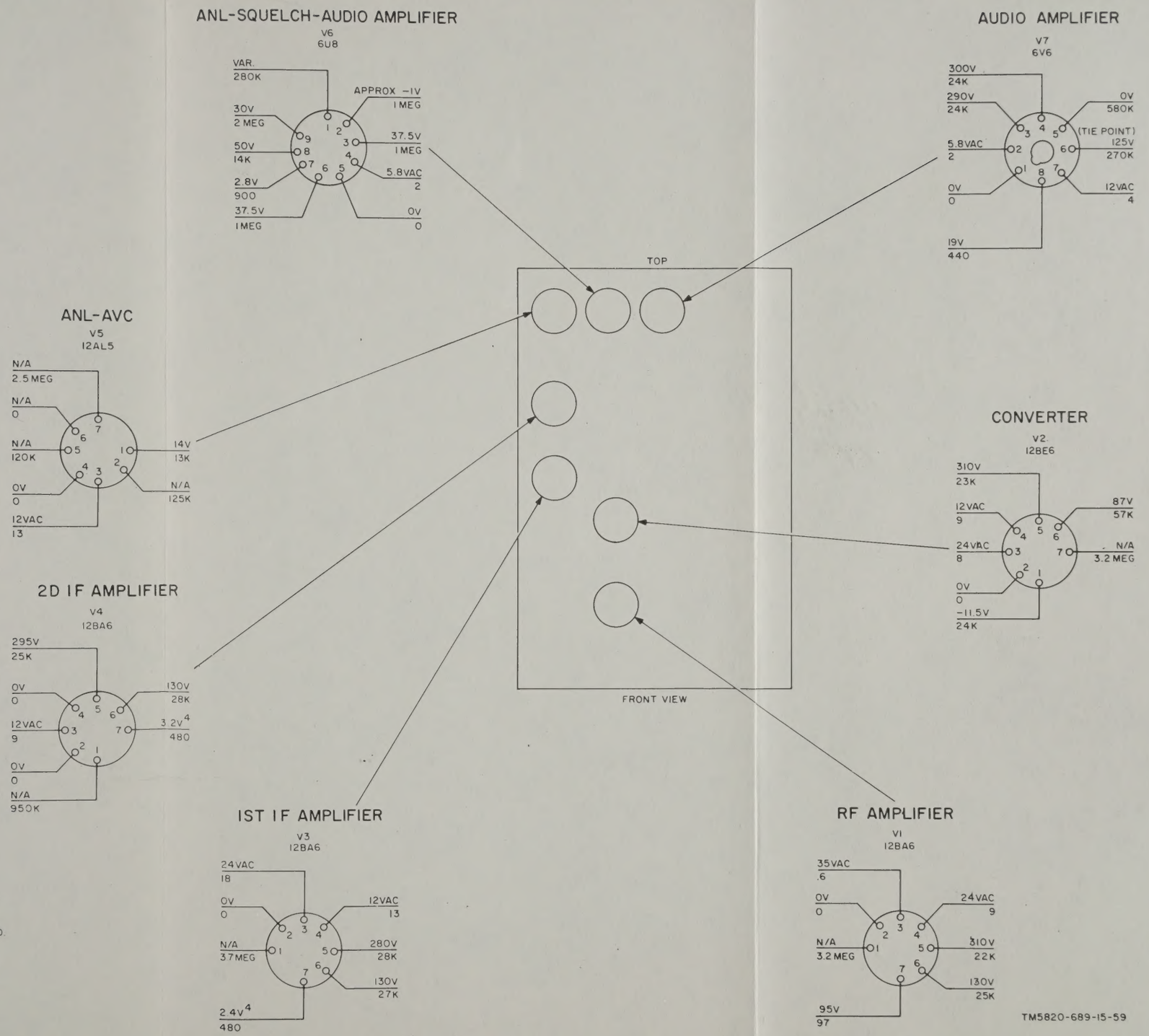
Figure 11–7. Dynamotor-Power Supply PP–4599/SRC–32X (110 vdc), schematic diagram.



NOTES:
1. XP1 IS A STANDARD 7-PIN MINIATURE TUBE SOCKET.
2. ALL RESISTORS ARE IN OHMS, CAPACITORS IN PICO-FARADS UNLESS OTHERWISE SPECIFIED

TM5820-689-15-42

Figure 11-8. Power Supply PP-4600/SRC-32Y (115 vac), schematic diagram.



NOTES:

1. VOLTAGES AND RESISTANCES MEASURED TO GROUND.
2. UNLESS OTHERWISE MARKED; ALL VOLTAGE DC.
3. UNLESS OTHERWISE MARKED; ALL MEASUREMENTS TAKEN WITH 20,000 OHMS-PER-VOLT DC, 1,000 OHMS-PER-VOLT AC MULTIMETER.
4. IF GAIN FULL CCW.
5. N/A = NON-APPLICABLE; INDICATES THAT A MEASUREMENT WOULD BE NON-SIGNIFICANT.

Figure 11–9. Receiver section, voltage and resistance diagram.

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